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Elements

of the Principle
of Mechanics

by J. H. Poincaré



Translated by J. H. Poincaré

1892

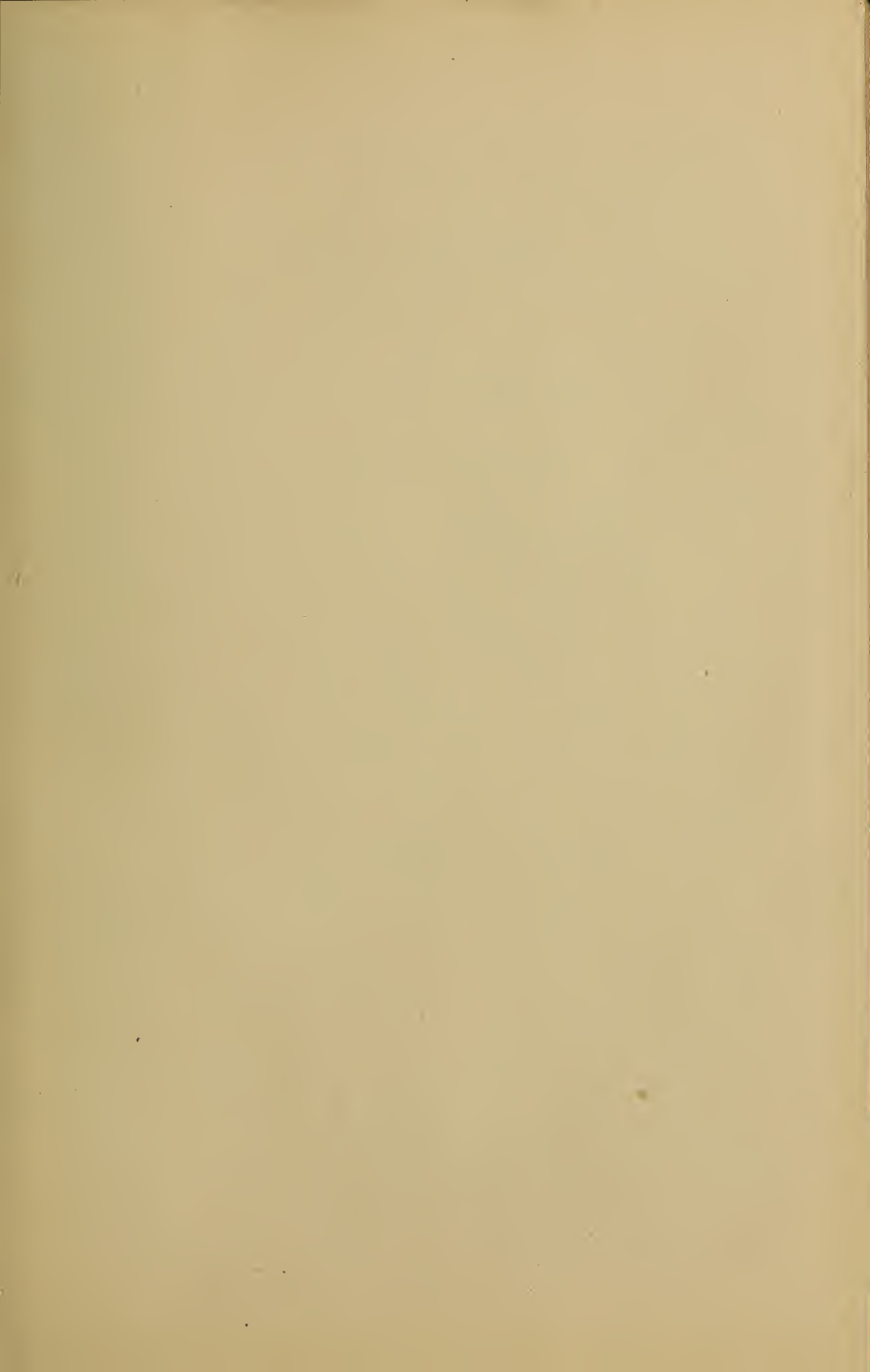


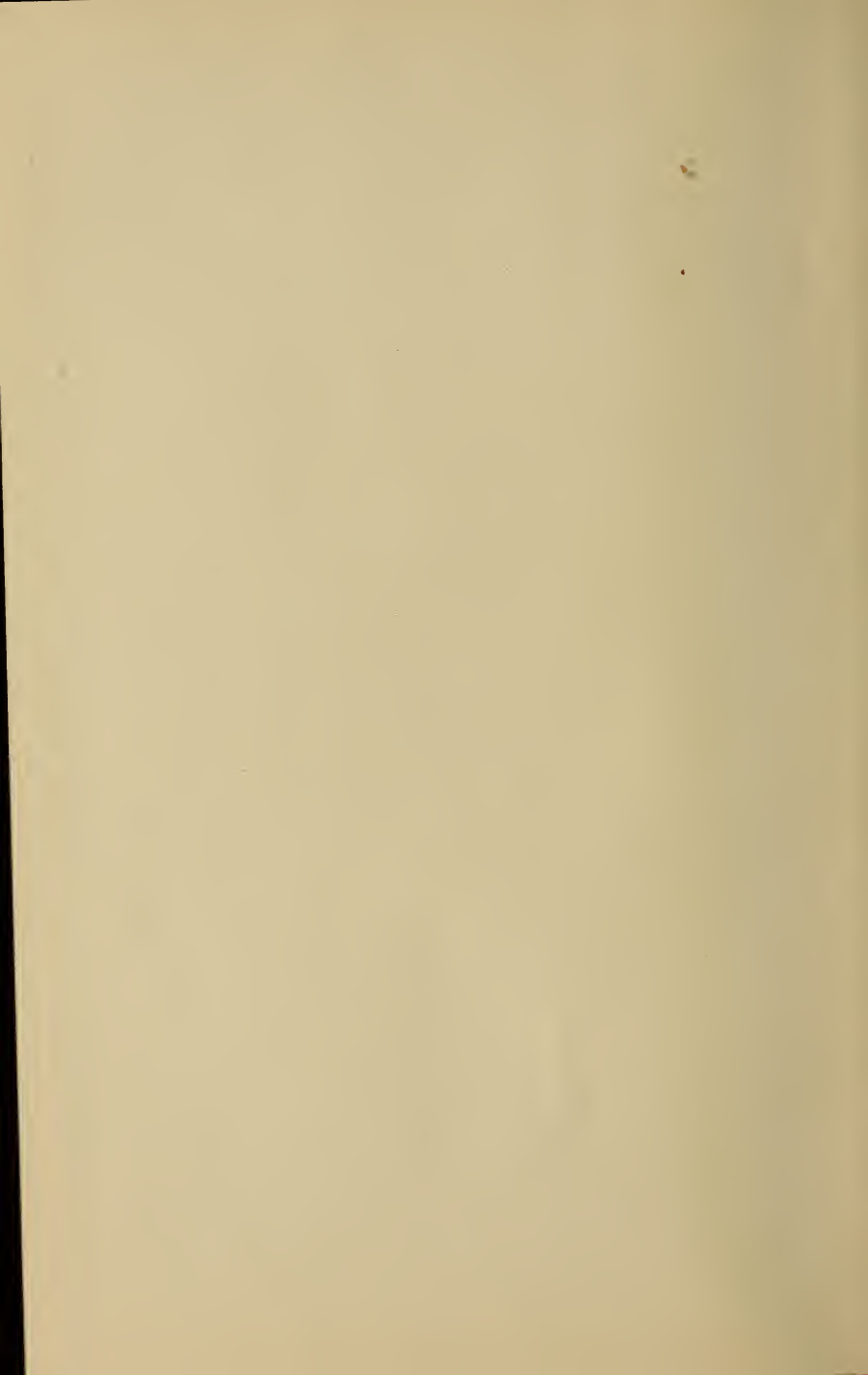
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Elements
of
Active - Principle
Therapeutics

By

J. M. FRENCH, M. D.



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THE ABBOTT PRESS
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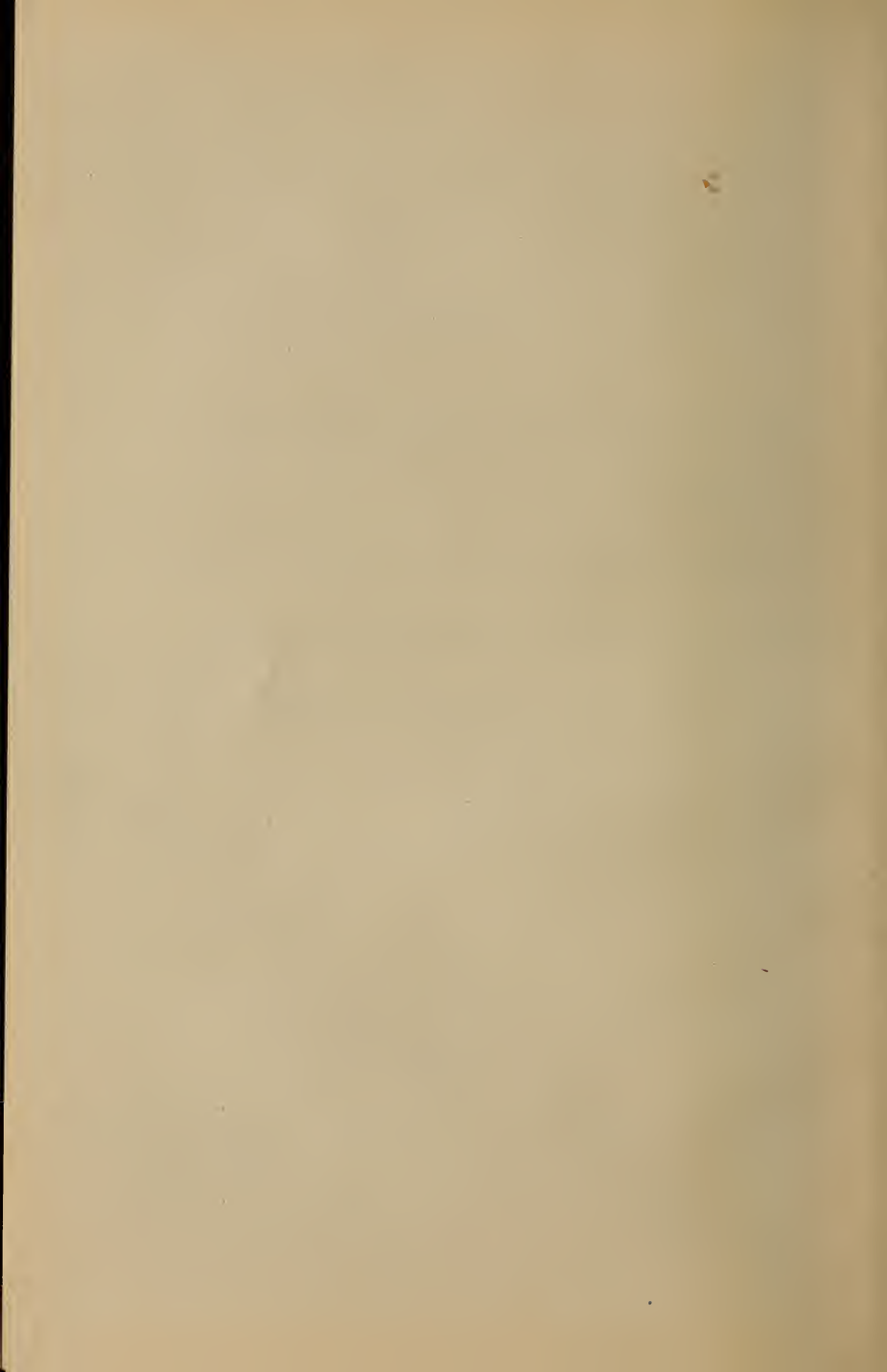
To Dr. Robert Gray

By birth a Southern gentleman, by education a Parisian scholar, in early life a surgeon in the Confederate army, and now for many years a successful physician in tropical Mexico; whose successful application and enthusiastic advocacy of active-principle therapy has won him favorable recognition in many lands; to whom the writer is indebted for many personal and professional favors, and for whom, though never having seen him, he yet entertains a warm personal regard, this little volume is affectionately inscribed.



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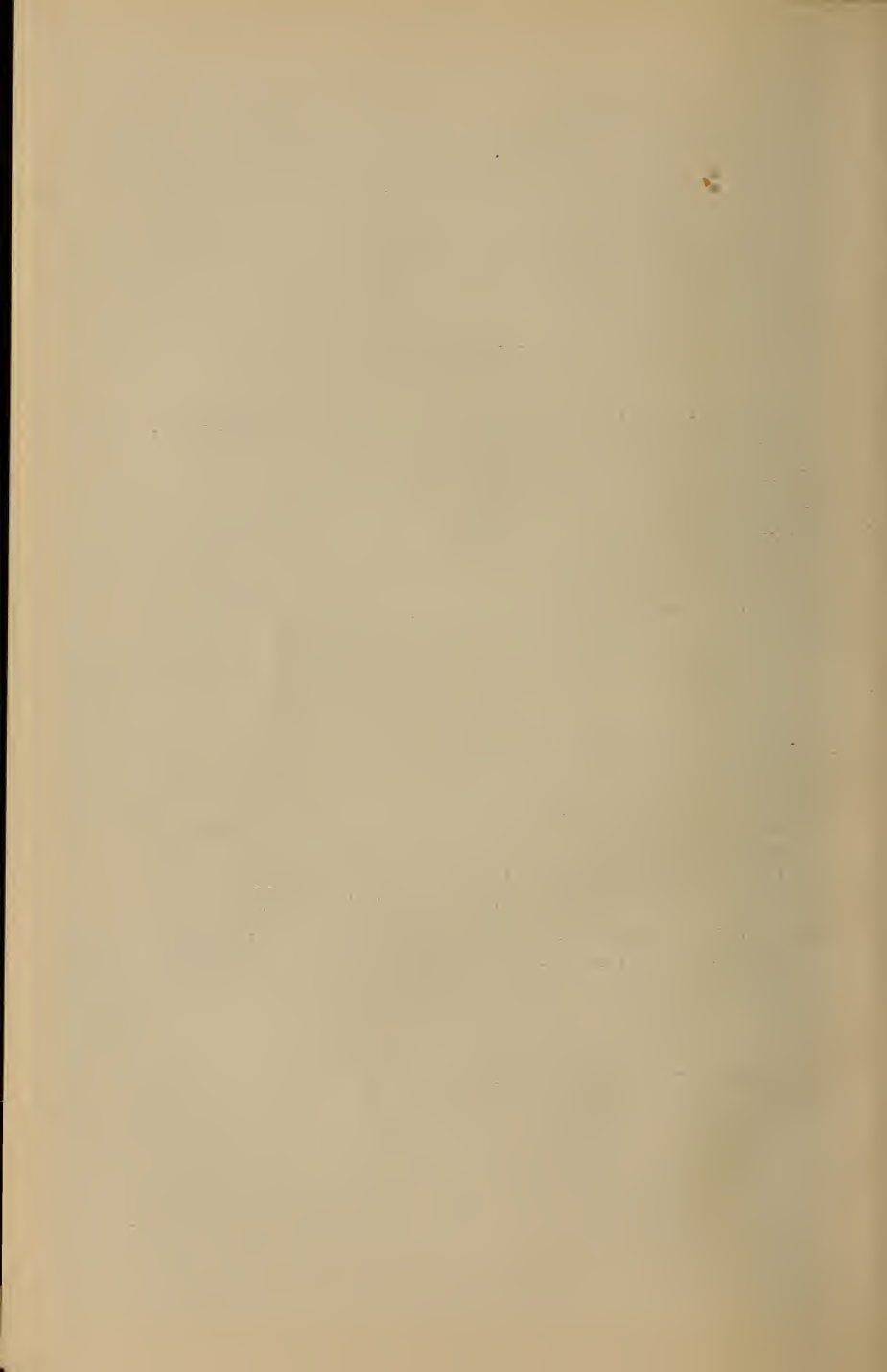
PREFACE

Nothing has ever been written—or at least nothing has ever come to my notice—which has seemed to me equal, as an introduction to the use of the active principles according to the method of the immortal Burggreave, to the first edition of Dr. Shaller's "Guide to Alkaloidal (Dosimetric) Medication." Especially did this work meet the wants of the times in which it was written, when the method described was a new one, and the physicians into whose hands the work might fall, needed to be enticed into the use of the new forms and ways by the skill of a master not only of medicine but of language.

But now that the dosimetric method has been modified, naturalized, and re-named, as a result of its introduction into and popularization in America by Dr. Abbott and his ever-increasing band of fellow workers, it seems desirable to have a re-statement of the old truths in the new forms. It is this which is attempted in the little work which is here presented—which is, indeed, but a primer of its subject, and aims only to state the fundamentals of active-principle therapy as clearly, as definitely, and as briefly, as lies in the power of its author.

JOHN MARSHALL FRENCH, M. D.

Milford, Mass., March, 1916.



Elements of Active-Principle Therapeutics

CHAPTER I

The Development of Active-Principle Therapeutics

WHEN I was a student in Dartmouth Medical School, one of the professors told us a little story one afternoon, to while away an otherwise dull hour, which made so deep an impression on my mind that I have never forgotten it.

It was the story of a young man who had been suffering for a long time from some obscure disease and was steadily growing worse, while the attending physician gave little hope of his recovery. Finally, as a last resort, and at the request of the patient's father, a consultation was held, six of the ablest physicians in the vicinity being summoned to examine the sick man and consider what could be done for him. The doctors met, and each one made a thorough study of the patient and his symptoms, after which they retired to a private room for consultation. Meanwhile the anxious father, determined to know the opinion of the consultants at first hand, and not as it might be doctored up and given out in the interests of the attending physician, had secreted himself in a closet in the room where the physicians were to meet and listened intently to the discussion which took place.

One by one, beginning with the eldest and coming down to the youngest, as is duly provided by the code of ethics, these wise and scientific men delivered themselves each of his own opinion as to the diagnosis and pathology of this baffling case and each offered the best explanation he could present of the obscure and unusual symptoms from which the patient was suffering.

The Thing of Most Interest—The Cure

Finally, when all the older men had spoken, it came the turn of the youngest and last of the six. "Gentlemen," he began, "we have spent all our time thus far in considering the nature of the disease from which this man is suffering. The thing which interests me most is, *what will cure him.*"

In the closet the listening father in his heart applauded and quickly registered the vow, "*This is the doctor that shall treat my son.*"

So it is that men seek a physician to be cured of their diseases or be relieved of their pains; and he is a poor doctor, from their standpoint at least, who can not grant them the one boon or the other. To the physician the diagnosis is important and the pathology is essential; but to the poor victim and his friends the cure is everything. To the men and women who employ us, who pay our bills and furnish us a living, we are simply doctors, and not scientific men; curers, and not preventers of disease. From their point of view, the doctor who, when called to attend a sick man, tells him at the outset that his disease is self-limited and must run its course, that it can not be aborted, cut short or modified in any way by medical treatment, is not worthy of the name of physician and has no excuse for pretending to treat the sick.

And, frankly, when you come to think about it, how would you like that kind of a doctor to treat you when you are sick? When that time comes, you will be likely to feel that the real business of a doctor is to cure you; and if he does not know how, then his business is to *find out how*. You will be apt to realize then that the diagnosis and pathology of disease are merely preliminaries to the all-important business of treating, and, if possible, curing the sick person.

My good friend, your dean, suggested to me some months ago that he would like to have me give a few talks on some practical subject to the students of this college. When in response I proposed to talk to you about *active-principle medication*—than which I know of no more practical subject in medicine—he expressed a fear lest I might find it difficult to interest you in such a subject.

I confess that I was somewhat surprised at this reply; for I am unable to understand how it can be possible that you, who have undertaken to fit yourselves to practice medicine, could fail to take a lively interest in the most important part of the curriculum, the treatment of disease. Surely, this can not be true—it is unthinkable. There are only two explanations which occur to me, and the first is that my friend himself is not convinced of the practicability and superiority of the methods which I shall advocate; but from my long acquaintance with him I can not believe that such is the case. There remains only the alternative that the Doctor fears I may not be able to put the matter in such a way as to make it clear, and plain, and attractive to you. Well, *that is up to me—and to you, to decide.*

Active-Principle Medication Not a “New System”

Active-principle medication (which is also known as dosimetry, alkalometry, alkaloidal medication, active-principle therapeutics, and by various other names) is not, and does not claim to be a new system of medicine, but only a new method of employing drugs; and I believe, and shall endeavor to convince you, that it is at once the most potent, the safest, the most convenient, and in every way the most satisfactory—both to patient and physician—of all known ways of using drugs for the cure of the sick.

It is in no sense a school or a sect, and must not be so understood.

Active-principle medication stands for therapeutic optimism, as opposed to the prevalent therapeutic nihilism of the day. The active-principle physician is a man who believes he *can do things*. He believes that remedial agents, when properly administered, positively *do* exert a favorable influence upon the course and termination of disease-processes. And not only does he hold this as an abstract truth, but he confidently affirms, as to a large class of cases, that he has found the drugs that will do the work, and has learned how and when to administer them so as to obtain the desired result; while, as to the remainder, he is searching diligently for the means required, and confidently looks, day by day, for their discovery.

There has been great progress in all departments of medicine during the last quarter of a century, and not the least in the department of therapeutics. The change has included the forms of the medicines used, the methods in which they are administered, and the indications for which they are employed.

When I began to visit patients with my preceptor, he used to carry a big black trunk filled with nauseous pills and powders and liquid abominations. Today I can carry more kinds of drugs (and do vastly better work for my patients) in a pocket-case of 2-dram vials filled with clean, neat-looking granules or tablets.

My preceptor gave saltpeter and "spirits of niter" to lower the temperature in typhoid fever, with powdered opium to lock up the secretions and relieve the pain, and brandy or whisky to start up the flagging pulse. I, today, go about it in a very different way.

He did not care to begin the treatment until the symptoms were well marked and the diagnosis evident. I want to see my patient at the earliest possible moment,

before I or anybody else can tell what is the nature of the fever from which he is suffering.

His endeavor was to conduct the sick man safely through the various phases of the dreaded disease, and save his life by heroic measures, at the last, if necessary. My aim is to save him serious illness, if possible—and, if I can do it without permitting the development of symptoms enough to warrant a definite diagnosis, I am so much the better pleased; and so is the patient.

A Mighty Progress: The Active-Principle Materia Medica

Now, I do not mean to intimate that all the progress in therapeutics has been in the direction of the active principles, for that would be absurd. We have the synthetics, and the animal extracts, and the serums and antitoxins, electrotherapeutics, spondylotherapy, and other forms of physical therapy and many things equally important; and no one treats diseases as they were treated forty years ago. But it is my desire to interest you in the use of the active principles after the manner of Burggraeve and Abbott, and their followers.

It was one of Boston's honored pharmacists, Mr. F. A. Davidson, president of the Theodore Metcalf Company, who, on one occasion, said in the local medical society, of which I am a member, that the alkaloidal granule represented the highest development of the art of the pharmacist. And it was another of the most prominent pharmacists of the country, Mr. J. K. Lilly, of Indianapolis, president of the firm of Eli Lilly & Co., who in a recent article in *The Pharmaceutical Era* upon the development of American pharmacy, after describing some of the improvements which have already been made and still remain to be made in pharmacy and therapeutics, adds:

“We further predict that even more radical changes will occur in the next quarter century; that all the

progress of the one just closing will be as child's play compared to that which will be experienced between 1912 and 1937. Crude drugs will gradually disappear, to be replaced by active principles, synthetic products, and biologics. The practice of injecting intramuscularly and intravenously will increase. Punishing the stomach with large, frequent, and nauseous doses is bound to give way where possible to more refined and direct methods. Medicine will become less and less empirical, and more and more rigid demands will be made upon the manufacturer. We are profoundly convinced that these demands will be fully met."

The Development of the New System

Let me now sketch for you in brief outline the development of this new system, which can be traced in three successive steps, the first of which made the system possible, the second made it an accomplished fact, while the third made it an indispensable necessity to every progressive physician.

The initial step consisted in the discovery of the alkaloids and other active principles of medicinal plants, thereby providing the necessary material.

The first of the alkaloids to be brought to the knowledge of the medical profession was morphine, which was isolated and described by the apothecary Sertuerner, in the year 1816. Within the next sixteen years, strychnine, brucine, quinine, cinchonine, narcotine, codeine, veratrine, coniine (or cicutine), atropine, nicotine, aconitine, and hyoseyamine were discovered by different chemists, so that by the end of the first third of the nineteenth century no less than thirteen alkaloids were known and prescribed by physicians. Since then numerous additions have been made to the list of active principles, which includes not only the alkaloids proper, but many resins and glucosides, besides some miscellaneous

principles, and concentrations sufficiently potent to allow them to be classed either as active principles or with them.

Many of the latter class of remedies were up to a recent date manufactured by B. Keith & Co., of New York, and by Lloyd Brothers, of Cincinnati. They were for a time enthusiastically advocated and largely employed by the eclectics; but most of these so-called resinoids were later discarded by them, as a school, in favor of what are called the "specific medicines" that were first introduced by Dr. Scudder, and afterward manufactured by the Lloyds and by Merrell. At present, along with these active vegetable derivatives—not, indeed, similar to them in derivation, but similar in use—are included a considerable number of the more potent chemical synthetic and inorganic substances, which are largely used by the active-principle therapists.

The Principle of Dosimetry: Minute, Frequent Dosage

The second step in the development of active-principle therapeutics consisted in the establishment of certain general principles governing the use of the active principles as to methods, indications, and dosage, for the purpose of accomplishing certain definite therapeutic results. This revolutionary step was brought about by the master-mind of Burggraeve, of Belgium, who conceived and elaborated the method which he named dosimetry.

Dr. Burggraeve had seen the defects of the old systems of therapeutics, in which the natural drugs were the sole medicinal resources of the doctor. These were administered mostly in their crude form or in the shape of voluminous mixtures, and were inconvenient to carry, unpleasant to take, very uncertain as to action, and decidedly unsatisfactory in their results. From such a combination eventually, and inevitably, there came into

being, on the one hand bald therapeutic nihilism and, on the other hand, blind faith in the various forms of suggestion.

Adolph Burggraeve was born in Ghent, Belgium, in the year 1806. He died in 1902, after nearly a century of life spent in his chosen profession, the later years of his active life having been devoted to the development of the system of therapeutics, which is his masterpiece. He became professor of anatomy, and later of clinical surgery, in the University of Ghent; also he was a member of the Royal Academy of Brussels. It was at the latter institution that he conceived and elaborated the system of dosimetric medication—an enduring foundation upon which his fame will ever rest.

The Principles of Dosimetry, According to Burggraeve

As stated by Burggraeve, *dosimetric medicine rests essentially upon its power to jugulate those fevers in which all acute maladies have their commencement. Its great end is to prevent anatomo-pathologic (this is Burggraeve's own wording) lesions, for these once established are above the resources of art.*

The study of morbid causes he declares to be indispensable, since without it medicine is little more than empirical. The dosimetric medicaments are simple, never composite or amalgamated. The "dominant" treatment, as it is known in dosimetric practice, consists in attacking the morbid cause. The "variant" treatment is applied to those symptoms through which the diseased organism makes known its sufferings.

To acute maladies, dosimetry opposes a sharp and active treatment, while chronic maladies are combated by more deliberate methods of treatment. That is to say, in acute maladies the treatment must proceed as rapidly as the disease, in order to prevent organic disturbances;

but in chronic maladies the treatment should proceed slowly, in proportion to the lengthened duration of the disease.

The medicaments most commonly administered are the single, proximate principles, such as the alkaloids, which are given in divided doses, usually in the form of soluble granules.

These are, in substance, the words of Burggraeve himself and may be taken to represent accurately the spirit of dosimetric medicine as understood by its founder. It is worthy of note that he gives the place of first importance to the object to be accomplished, and the second only to the medicaments to be prescribed.

Although Burggraeve was able to show remarkable results in the treatment of disease by his new method, yet he did not succeed in securing its adoption to any considerable extent, until after he had interested Chantaud, a noted pharmacist of Paris, in his undertaking, and formed an alliance with him, according to which the latter thereafter devoted his great skill to the manufacture of the highest grade of alkaloidal granules that had ever been produced, and in this way became the practical co-worker with Burggraeve in building up his new therapy. From this time on the dosimetric treatment of Burggraeve spread rapidly, and especially did it begin to flourish in Belgium, France, Spain, Portugal, Italy, Holland, and Denmark.

The next step in the evolution of modern active-principle medication consisted in certain modifications of the original system of dosimetry, and the broadening of its scope and methods, attendant upon its introduction into America.

One of the first men in this country to become interested in the new system was Dr. W. T. Thackeray, who purchased an outfit for the manufacture of alkaloidal granules from Dr. Chartier, of Paris, and en-

deavored to persuade Messrs. Parke, Davis & Co., in whose employ he was, to engage in the business of manufacturing them. The firm, however, declined to undertake it, considering the commercial difficulties in their introduction too great. Thereupon Dr. Thackeray himself formed a company for the manufacture of the granules, and started and issued a few numbers of a journal, which he called *The Alkaloidal Clinic*, devoted to the advocacy of dosimetric medication. However, he did not succeed in making a success of either branch of the undertaking, and the enterprise soon ended in failure.

Abbott and Waugh Enter the Lists

Not long after this, Dr. Wallace C. Abbott, then a young doctor from Vermont, who had been graduated from the Medical Department of the University of Michigan, and had located in the suburb of Ravenswood, of Chicago, who happened to have been for some time interested in the teachings of Burggraave, began in a small way the manufacture of alkaloidal granules, in order to supply himself and also the friends whom he had interested in this subject; and, in 1894, he began the issue of a new *Alkaloidal Clinic*.

Dr. Abbott was a man of unbounded energy and determination, and his enthusiasm proved contagious and caused the alkaloidal idea to spread rapidly. I myself am one of those whom he interested early; and in my library I have preserved not only the first issue of *The Alkaloidal Clinic*, but nearly every number that has followed. From that time onward, his has been the central figure in the propaganda for active-principle therapy in America, and his aphorism, "The smallest possible quantity of the best obtainable means to produce a desired therapeutic result," has been the slogan for rallying its forces to the battle.

Soon Dr. Abbott associated with himself Dr. William F. Waugh, an accomplished scholar, a successful physician and medical teacher, and a versatile and forceful writer, and who has since then shared in the work of editing *The Alkaloidal Clinic*—the name of which later was changed to *The American Journal of Clinical Medicine* as the scope of the work was broadened. These two active and brilliant men were for a time also associated in the manufacture of all the medicaments employed in alkaloidal therapy, so called; a designation, however, which in the course of years grew much broader than the term would indicate, until it has finally come to include many remedies besides the alkaloids. The present status of the method may best be stated in the language of Dr. Abbott himself, who very properly may be called the father of American active-principle medication, as Burggraave was the originator of the earlier form of dosimetry. These are the leading principles governing the newer, more positive, more definite way of combating disease:

The Principles Governing Active-Principle Therapeutics

“1. The administration of small doses of the most active and potent known remedies at short intervals, until either remedial effect or signs of drug-sufficiency, i. e., the full physiological effect, are secured.

“2. The administration of such doses in the form of soluble granules or tablets each of which contains a definite amount of the drug.

“3. The additional use of such solvents, eliminants, vital incitants, and local and systemic antiseptics as have proven of remedial value.

“4. The use of any and all remedial agents in the most concentrated form available that will produce definite results in recognized conditions.

“5. The avoidance of promiscuous combinations, problematical remedies, crude drugs, and nauseous, changeable alcoholic tinctures and fluid extracts when the active (remedial) principle of the drug can be obtained in its purity and given in effective, well-established doses.”

Many other honored names have been associated with those of Abbott and Waugh in the building of active-principle therapy in America—a structure which is still in the process of making. Among them are those of John M. Shaller, the author of the best manual of alkaloidal medication for beginners; E. M. Epstein, who may be termed the scholar of the method; Coleman, the persistent advocate of systemic antiseptics in the prevention and treatment of the contagious fevers; Alfred S. Burdick, the present managing editor of *CLINICAL MEDICINE*; and George F. Butler. Many more names might be mentioned, in fact one hardly knows where to stop.

As to the present status of active-principle medication, it can be said that many thousand physicians are using the methods and medicaments referred to in their daily practice to a greater or less degree, and their number is each year increasing. Enthusiasm and optimism are the characteristics of these men as a class. They claim that they are better physicians because of the teachings of Burggraave and his successors; that the principles and methods of dosimetry have enabled them to meet disease with greater confidence, and overcome its manifestations with greater certainty, than they were able to do with the old galenic methods.

One of my own most intimate friends, the physician through whom I got my first introduction to this newer and better method, assures me that under the uncertainties of the old system of medication he had lost all enthusiasm and nearly all interest in the practice of medicine, and was seriously contemplating changing his occu-

pation, when, thanks to Doctor Abbott and *The Alkaloidal Clinic*, he was ushered into a new world in his profession, given a new confidence in his ability to help the suffering, and filled with a new enthusiasm in the practice of medicine. And I can confidently affirm, from my own knowledge of this physician, that this optimism has never left him, but that he is today a broad-minded, well-balanced, optimistic, and successful practitioner, a man who believes in himself and in his power to relieve suffering and to prevent and cure disease—and these are the things which every doctor needs to believe and do.



CHAPTER II

The Fundamental Laws of Active-Principle Therapeutics

LAST week I described to you the origin and growth of active-principle medication in Europe and America. Today I desire to call your attention to the fundamental laws, general principles, or elementary teachings, upon which this method of therapeutics is based.

According to my conception, these are three in number, and these three embrace all the things which are strictly essential to the method, although many other and less important peculiarities and practices have grown up around them, and of these I shall speak in my next lecture.

The Use of the Active Principles.

The first law teaches the use of the active principles in the treatment of disease.

The term "active principles," as here employed, is interpreted to include not only the alkaloids proper, but also many glucosides, resins, camphors, neutral principles, resinoids (so called), and concentrations of vegetable drugs, together with such definite chemical compounds as are sufficiently potent to produce positive results in minute doses, and of sufficient medicinal virtue to render them desirable additions to the physician's armamentarium.

This law has usually been considered not only as the first, but the most important of the three. The followers of active-principle medication are ever ready to put it to the front, and defend it as the cardinal principle of their faith and practice. If you ask them for their reasons, they will point you to the acknowledged facts that

quinine is more active than Peruvian bark, atropine more positive in its effects than belladonna, morphine more definite and certain in its results than opium, pilocarpine more uniform in its effects than jaborandi, strychnine more efficient than nux vomica, and, in general, every active principle more potent, more uniform, and more reliable than the crude drug from which it is derived, or its galenic preparation.

This being the case, he holds that it is manifestly better to employ these active principles and reject the bulky residue, the inert matter, the unknown and unreliable substances whose effects cannot be predicted with any degree of certainty. For why should any part of a plant or of an animal or mineral substance which is not active be used in medicine? Instead of choosing his remedies for their bulk, and possibly for their disagreeable qualities, as was apparently in some instances the custom in olden times, he seeks for "the smallest possible quantity of the best obtainable means to secure a desired therapeutic result."

Arguments in Favor of Active Principles

If we analyze the arguments in favor of the active principles, we shall find that they can be separated into three classes.

First, because, as compared with the crude drugs and their galenic preparations, they are condensed in form, minute in dose, and positive in results; containing only the active remedial principle of the drugs which they represent, and rejecting the inert material.

Secondly, because they are uniform in composition, containing, as a rule, but a single therapeutic principle, and therefore always to be relied upon as producing the same remedial effect; whereas the crude drug may contain several unlike and even opposite principles, and

these may occur in different proportions in different specimens of the drug, so that one sample of a galenic may be much stronger than another which was prepared from the same formula, and different samples similarly labeled may produce entirely different and even conflicting results. Recent analyses of standard tinctures on sale in the different drug stores of the same cities have shown a wide variation in strength, although all were supposed to contain the same percentage of the drug.

The drug-strength of a plant is affected by the character of the soil, the amount of sunshine, the temperature, and many other conditions of environment. And these may change, not only the total amount of active principles in a plant, but the relative proportions of the different principles in the same plant.

A good illustration of this fact is found in jaborandi, which contains two active principles, pilocarpine and jaborine, the one of which is the most potent of all our diaphoretics, while the other is the exact opposite, its effect being allied to that of atropine, drying up all the secretions. While under ordinary conditions the amount of jaborine is comparatively minute, and the drug jaborandi is given to promote the secretions, cases have actually occurred where it has been found to produce the opposite and undesired effect of drying up the secretions. But, if pilocarpine is used instead of jaborandi, no such effect is possible.

Keeping Qualities of These Drugs

Thirdly, they are convenient to carry, taking up but little space, and having excellent keeping qualities. These qualities render them of especial value to the country doctor who is far from his base of supplies. Dr. Robert Gray, of Pichucalco, Chiapas, Mexico, an American physician, who has practiced in the most unhealthy

belt on the continent, most of the time since the close of the Civil War, writes as follows of his own experience.

"I carry one hundred and fifty-six active principles, weighing less than five pounds with ease, the equivalent of which in galenic forms would load two mules. I am never ambushed by the enemy when suddenly confronted by some desperate emergency, no matter what the disease or the complications may be. I have the antidote while the time for medication still remains, and do not have to send prescriptions to a distant drug store for uncertain remedies, a makeshift often fatal to an imperiled life."

As for the keeping qualities of the active-principle medicaments, they are due in part to the chemical qualities of the alkaloids themselves and in part to the manner in which they are held together in the standard granule, which is well known to preserve the medicaments much better than any kind of coating that can be applied to a pill or a tablet. This is well seen in the case of calcium sulphide, a drug that is almost certain to deteriorate by keeping when prepared in the ordinary tablet or pill form. Here the superiority of the standard granules over the other preparations is very marked.

While we believe in the superiority of the active principles, as a general rule, cases no doubt are encountered in which better results can be obtained from crude drugs and their galenical preparations, as well as from the coal-tar preparations and other chemical products. When this is so, they should be used without hesitation. In the words of Shaller, who is one of the first authorities on active-principle medication in America, "Any remedy that is good and that cures is used, no matter what its source or by what school it has been first advocated." The greatest need of the doctor is, not the active principles, but *definite therapeutics*, no matter whether it be in the direction of galenic medication, biochemistry, specific medication, serum treatment, or glandular therapy.

Small Doses Frequently Repeated

The second law teaches the administration of these remedies in minimum doses frequently repeated, until improvement is manifested or physiologic effects are produced. This is known as the intensive method of dosage, or dosage for effect.

I have said that the use of the active principles looms highest in popular estimation of all the characteristics of this method. But, if this were the only factor, it could never rise to the dignity of a system of therapeutics or even a method of administering drugs. The first law determines the tools to be used, the second explains the manner in which they should be used.

The matter of dosage is one of the first importance to the physician. In the system in common use—which we may term massive dosage—there is a maximum and a minimum dose laid down, and these must be learned arbitrarily for each drug and every preparation. Very likely there may also be an average dose given, which is supposed to be the one most commonly used; yet, if the doctor keeps within the limits of the maximum and the minimum dose, it is assumed that he is on the safe side and cannot be blamed, whether he fails to benefit the patient on the one hand or happens to kill him on the other—for has he not followed the dictum of the authorities and given the proper dose?

Like the spelling book, the dose book usually takes up a good share of the student's time when in school, and like it, again, is promptly laid on the shelf when school days are over. Of my two teachers of materia medica when I was in the medical school, from one of them I do not remember that I ever learned much of anything except doses—and I promptly forgot these as soon as I had passed my examinations.

With many remedies, when a maximum dose is given,

it is supposed to produce the full effect of the drug, and a second is not to be given until the first is eliminated from the system. But whether or not it really does produce the anticipated effect upon the system, depends upon so many factors that no one can foresee what the result really will be.

If the patient is sensitive to the action of this particular drug, he may be overwhelmed by a dose that would produce no noticeable effect upon another person, even though the two might seem to be counterparts. On the other hand, we often meet with patients who are not easily affected by drugs of any kind, and hence require very large doses in order to secure results.

How is the doctor to decide in the case of a new patient whether the dose which he has administered will prove a poisonous one or will fail to produce any noticeable effect, either therapeutic or physiologic?

This Method of Dosage Overcomes a Defect

The defects of this system of dosage are frankly admitted by our best therapeutists. Potter, in his excellent "Materia Medica, Pharmacy, and Therapeutics," says: "The dosage of medicine is the weakest part of the therapeutic armament, the flaw in our weapons which may be the cause of their failure at any moment, perhaps the most critical one for a life. If the accumulated rubbish of ages, which has been called therapeutic knowledge, is ever to be given scientific shape or placed in the process of becoming a science, the question of dosage must form one of the principal corner-stones in the foundation."

Now, it is this weak spot which active-principle therapy has undertaken to strengthen, this chief corner-stone which it has set out to put in its proper place in the temple of scientific medicine. Already, in the process

of evolution, in the attempt to build our fragmentary therapeutic knowledge into a science, there has been formulated by the master-mind of Burggraave and elaborated by the dosimetrists of Europe and their disciples in America, a system of dosage which avoids all the dangers mentioned and at the same time meets the requirements of safety, accuracy, and convenience.

This, as already mentioned, we call the intensive method, and its fundamental principle is dosage for effect. By this method, a minimum dose is given at the outset, and this is repeated at frequent intervals until the characteristic effect of the drug is secured, either therapeutic or physiologic; and then less frequently as long as it is desirable to maintain the effect.

Granules of Minimum Dosage Employed

As a matter of convenience, the medicaments used are nearly all prepared in granules of minimum dosage, so that the labor of learning the doses is entirely obviated, as the doctor never undertakes to put up his own granules. This system is especially adapted to the more powerful drugs of whatever nature, which are the very ones that by the common method give rise to the most anxiety, lest ill results should follow their use in maximum dosage, or no results be evident from their infrequent exhibition in minimum dosage.

For example: If the doctor wishes to give aconitine in a case of fever, he gives one granule, preferably in solution, every fifteen to sixty minutes, according to the intensity of the fever and the condition of the patient, until the remedial effect of the drug is seen by the establishment of perspiration, the pulse becoming softer and less frequent, the tongue moister and the fever less intense; or, failing to get these results, it is given until the earliest manifestation of its physiologic action, which is seen in the sensation of numbness and pricking in the

lips and tongue, extending to other parts, makes its appearance.

The first group of these symptoms shows that the drug has done its work and that thereafter it may be given somewhat less frequently as long as it is desired to maintain the effect. The second group of symptoms indicates that as much of the drug has been given as can be with safety and it is time to stop. But in every instance these symptoms give ample warning in time to avoid all danger.

This method tends to accuracy in therapeutics. It relieves the physician of all fear of overdosing and all need of learning an arbitrary dose-list. But it requires an absolute knowledge of two things on the part of the physician: He must know, first, what he wants the drug to do—that is, the remedial effect. Secondly, he must know what the drug will do if pushed to the limits of safety—that is, its physiologic action. These two things are absolutely essential. They are best learned by studying, in case after case, the action of each drug upon the patient, with your own eyes and ears and fingers, until you become familiar with their effects.

This experience in itself will make you a better therapist than you could otherwise be. That is one thing where the old country doctor, who remained with his patients the livelong night, had the advantage of the scientific young fellow of today, who simply looks at the nurse's chart and prescribes from that. But to be a good doctor, you must know the action of your drugs perfectly and be able to tell your nurse or attendant definitely what to look for, when to change the dosage, and when to stop. Do this, and you will get results.

Acute Diseases May Be Aborted

The third law teaches that acute inflammatory and febrile diseases may be aborted in a large proportion of

cases, provided that the proper treatment is begun before the occurrence of structural changes. From this follows as a corollary the importance of beginning early in the treatment of disease.

Here at last we are brought face to face with a therapeutic principle around which many a hard-fought wordy battle has been waged, and the truth of which is not even yet accepted by a large proportion of the medical profession—namely, the possibility of aborting specific and self-limited diseases. It may, therefore, be worth our while to spend a few minutes in considering the arguments in favor of the principle which I have stated, in order that you may determine for yourselves whether or not it is true, and whether the resulting corollary is a safe one.

Here, with your permission, I will quote some passages from a paper entitled, “Can a Specific Disease Be Aborted?” which I read before the Worcester District Medical Society some years ago and which was afterward published in *The Boston Medical and Surgical Journal*.

To be on the safe side in this discussion, let us be sure of our definitions.

“*Specific disease*, a disease which has a determinate course and succession of phenomena, and is due to some distinct and definite cause, as syphilis or itch.”

“*Self-limited disease*, one having a somewhat definite course and period of duration.”

“*Abort*, to cut short the course or growth of.”
(Standard Dictionary.)

In the light of these definitions, the question for us to consider is practically this:

Is it possible for the physician, by any means at his command, to cut short the course or limit the growth of disease in general; and in particular of such forms of disease as are due to more or less distinct cause, and

which, when left to nature, develop according to a determinate course and succession of phenomena, and have a somewhat definite period of duration? To be more specific: Can a simple fever be broken up or a local inflammation be cut short in its early stages? Can you limit the course of inflammatory rheumatism or abort a typhoid fever, a pneumonia, smallpox, gonorrhea, diphtheria, the itch? Can anything be done to limit the ravages of the bacillus tuberculosis when once it has begun its deadly work?

The answer which shall be given to these questions is of the utmost importance to the physician, as affecting his reputation, his success, and the satisfaction with which he practices his chosen profession. It is of even greater moment to the patients whom he treats, and the families under his care, because it helps to determine whether their physician shall be a welcome visitor, bringing hope and added years of life to the sick one, and giving courage to his friends and family, or one whose coming is looked upon with dread, whose presence breathes only despair, who admits himself a failure at the outset, and who practically counts himself out as a factor in the treatment of disease.

What Authorities Say

It must be admitted that the weight of authority is decidedly against the possibility of aborting a specific disease. It is almost universally assumed that a disease which has once gotten fairly under way must of necessity go on its course uninfluenced by medical treatment. Should a claim be made that a disease has been aborted, the usual answer is that the diagnosis was incorrect; that a disease is not a specific one unless it goes through a regular course, and if it does this it certainly is not aborted. Hence a specific disease cannot be aborted.

Just here the question suggests itself, does not nature itself sometimes abort disease? Or, to phrase it a little differently, do not diseases at times abort spontaneously? The answer to this is evident, and the fact is universally recognized by medical authors that such is the case. So well is this understood, that the second answer which is apt to be made to the claim that a disease has been aborted is, that it aborted spontaneously; or that it was an abortive case; or that nature aborts a certain proportion of cases. In each of these forms of reply, the fact of the shortening of the disease from its natural course is admitted and the only debatable point relates to the possibility of bringing about this result by artificial means, that is to say, by medical treatment.

But, if it be admitted that nature does actually accomplish this beneficent result in certain instances, then why should it be deemed impossible that art should be able to aid in the process? The law of cause and effect is everywhere the same, and it would certainly seem that where nature accomplishes a given result under certain conditions, it might be within the bounds of human skill to aid in bringing about these conditions, and thereby to assist in the work.

Should it be granted that such a result is within the bounds of possibility, and that it is also desirable, is it not the part of wisdom to seek for the means whereby it can be accomplished, instead of crying out in advance that it is impossible, that it cannot be done, simply because we do not know how to do it or have not the means now at hand? The history of medicine shows us that every important progress in our art has consisted in the accomplishment of that which but yesterday was declared impossible. It used to be supposed that conscious suffering was a necessary accompaniment of surgical operations; but Crawford W. Long, Horace Wells and Wm. T. G. Morton brought anesthesia to light and abolished

pain in surgery. Not so long ago as to be beyond my memory, it was considered that "laudable pus" was not only unavoidable but desirable in the healing of wounds; but Lister showed the world that it was not necessary, and it is now looked upon as a deep and damning disgrace.

If Diphtheria Can Be Aborted, Why Not Other Diseases?

But, if the possibility of aborting disease be admitted as an abstract proposition, how about it as an actual fact? Are there not instances to prove that in some cases at least specific diseases are unquestionably aborted, and that by strictly therapeutic measures? As, for example, diphtheria by antitoxin? What better example than this of the abortion of a specific disease can be asked for? It must be admitted that no better example of a specific disease can be found than this. It corresponds at every point with the definition which has been given.

Only a few short years ago few persons were rash enough to advocate even the possibility of aborting it. Today the world accepts it as a fact beyond dispute, and the physician who fails to abort a case of diphtheria which comes under his care makes haste to explain that it did not come into his hands until it was too late, or that for some reason beyond his control he was unable to administer the proper dose of antitoxin at the proper time. It is true there are still a few persons who deny the utility of antitoxin, just as there are those who deny vaccination or who continue to hold that the earth is flat and the sun moves round it once in twenty-four hours.

If it be admitted that diphtheria can be aborted and if the commonly received theory of the action of antitoxin be accepted, is it not within the bounds of reason that there may be corresponding remedies for some of

the other specific diseases, if not for all? That this supposition is reasonable is shown by the eagerness with which the medical world has sought and is still seeking for just these things. It is also true that in no other disease has an antitoxin been discovered which is as positive and beneficent in its effect as is that for diphtheria; but this fact only serves as an incentive to more earnest effort on the part of scientific men and as a stimulus to scientific research from one end of the world to the other.

Once more, if this result has been obtained by antitoxin, which is, after all, only a natural product, is it not conceivable that similar results may be obtained by other means just as natural. And if it be admitted that medical treatment exerts any influence whatever upon the course of a disease, is it not reasonable to suppose that this effect will be most marked during the formative stage, when it is not yet fully developed?

“Breaking Up” a Fever

To come down to specific instances, by what strict rule of science must it be declared an error to suppose that sweating may break up a fever or dissipate a local congestion? If we rightly understand the functions of the vasomotor nervous system and correctly estimate the role of vasomotor spasm and paralysis in the genesis of fever, is it not reasonable to suppose that means tending to restore the proper equilibrium to the circulation would have a tendency to dissipate the febrile paroxysms? And if the febrile condition is removed, is not the fever itself aborted, jugulated, broken up, cut short, made not to be?

Furthermore, what doctor in his practice does not strive, when he is called in the formative stage of a fever, to “break it up”? What one does not encourage

the patient and his friends to hope that this result may be obtained? And, should he fail to bring it about, what medical attendant does not gently intimate to the patient's family that he might have succeeded had he been called a little earlier in the case?

Now the question is, Are the doctors frauds in this matter or do they build better than they know? Is not their practice better than their theory? Do they not, by their practice, confess that the doctrine of the jugulation of fevers is a reasonable one? Does it not, indeed, work well in practice?

If antitoxin can abort diphtheria after it has gotten fairly under way, and if it renders a healthy individual temporarily immune to the toxin of diphtheria, then why should it be considered an absurdity to suppose that it can act upon the disease in the stage of incubation? And if antitoxin can do this, why not other agents? Even if no such agents are now known, may they not some time be discovered? And, if this possibility be admitted to be a reasonable one, why not search high and low for the means until they are found?

If mercury be a specific in syphilis, then why may it not act upon the disease in its incubative and formative stages, as well as after it has fully declared itself? Or, if not mercury, then some other remedy? Or why, if we were in possession of the proper remedy, might not the disease be aborted in the interval between the primary chancre and the secondary manifestations? If we possessed a specific in smallpox, why might we not expect to be able to abort the disease in the stage of incubation as well as to render the subject immune by vaccination or control the symptoms of the eruptive stage? If diphtheria can be aborted, why not pneumonia, typhoid and malarial fevers, gonorrhea, syphilis, rheumatism and consumption?

Should the answer to this last question be that we are

not yet in possession of the proper remedies and means to enable us to accomplish these results, however much as we may desire to do so, I beg to remind you that it is but a few years since we had no organic extracts, no serum therapy, no intestinal antiseptics, no nuclein, and almost no alkaloids.

Would it not, then, be better to admit the possibility of improvement and then go to work with all our might to make the possibility a reality, instead of spending our time in crying out, "It is impossible, it is absurd, it can not be done?"—a cry which has been uttered by every reactionary in the face of all progress since time began.

The Importance of Beginning Early

Coming now to the corollary, or deduction, of the importance of beginning early in the treatment of disease, we find nothing in it that is especially new, nothing to which most physicians will not readily agree.

The peculiarity of active-principle therapeutics in relation to this truth lies, not in its acceptance, but in the emphasis which is placed upon it. As to the fact, there is little difference of opinion among physicians. It remains for the disciples of dosimetry to insist upon its supreme importance and to urge its acceptance by the patient as an essential factor in the successful treatment of disease. He educates his patients systematically to send for their physician at the earliest indications of acute disease, and that not as a favor to the doctor but to benefit themselves.

From the doctor's own point of view, he will have more first calls, but fewer protracted sicknesses; more slight illnesses, but fewer fatal outcomes. The bills will be smaller in the individual cases but they will be sent in oftener and paid more promptly. And, surely, considered even from a financial standpoint, a live patient

is worth more than a dead one. Hence such a course will be of advantage to the doctor as well as to the patient.

When the physician is called to a case of disease at the outset, he does not have to wait until he can make a positive diagnosis before he begins the treatment. He does not need to spend a week in watching the development of the malady, meanwhile making daily visits of inspection but lifting no hand in defense of the imperiled vital forces.

Instead of this it is his privilege to treat the diseased conditions as he finds them and as they are indicated by the earliest symptoms in the case. He knows how to treat the elementary conditions of disease, even before the causes are evident and before a complete diagnosis is possible. Knowing the rational indications for early treatment, he is often able to prevent the development of pathological lesions and to see the patient restored to health without ever knowing the name of his disease. To be sure, this is an inexcusable sin in the eyes of the pathologist and one on no account to be countenanced. But the patient and his friends are usually well satisfied, and as they are the ones who pay the bills and recommend the doctor he ought not to be the one to find fault.

You will remember that I told you last week that Burggraave, the originator of dosimetric medicine, which was the original of modern active-principle therapeutics, states that "dosimetric medicine rests essentially upon its power to jugulate those fevers in which all acute maladies have their commencement. Its great end is to prevent anatomic-pathologic lesions, for these once established are beyond the resources of art."

This is only another way of stating the law which we have been considering; and you will readily see that the only way in which these results can be accomplished is by beginning early in the treatment of any disease. To

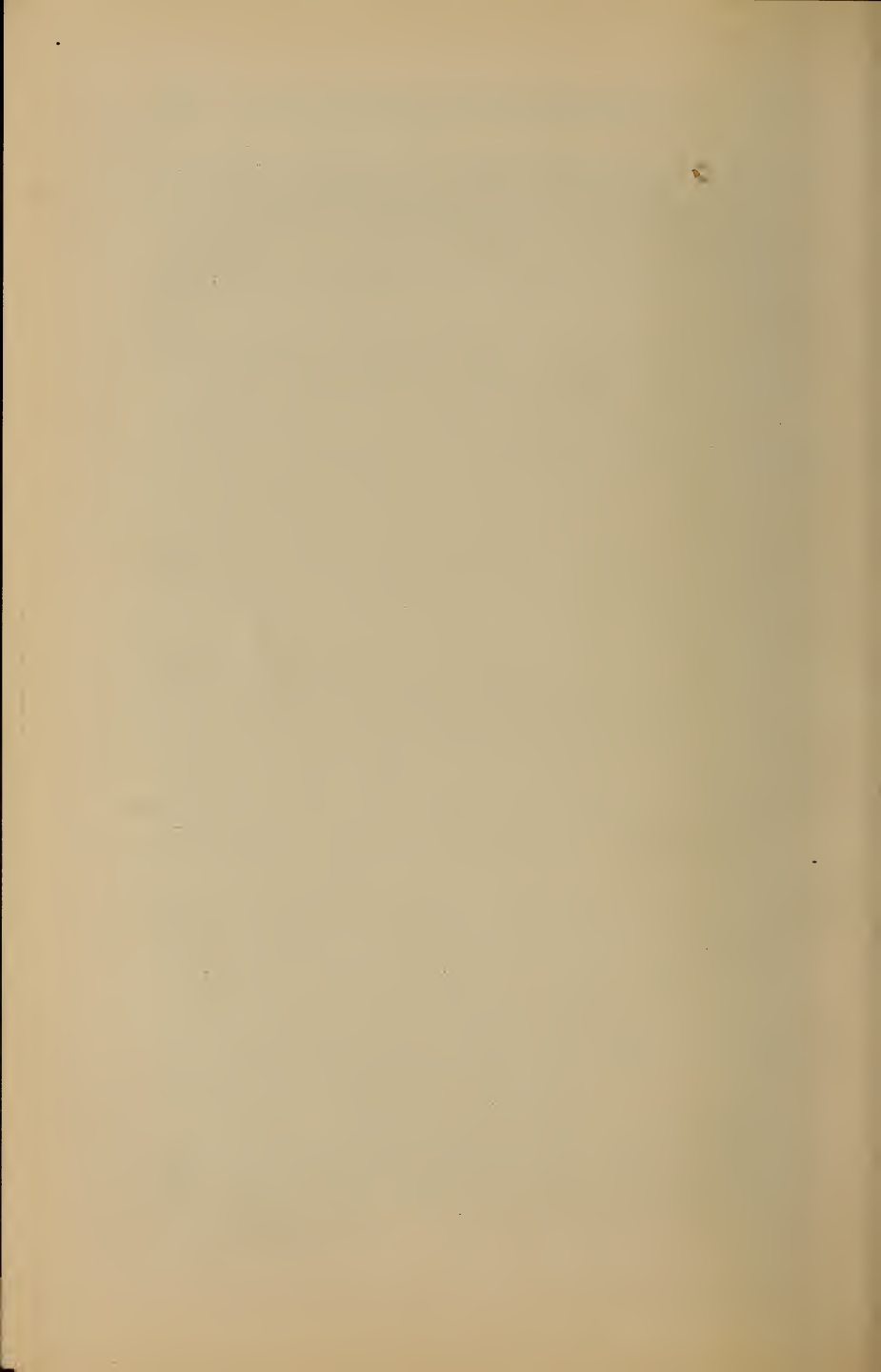
sum up, then, we may include the essentials of active-principle therapy under the three following heads:

1. The materials, which are the active principles, in the main.

2. The method, which is the intensive method of dosage.

3. The object, which is the abortion of disease; and this leads to the resulting rule of action: Begin early.

On these three principles hang all the minor peculiarities of the system—of which I shall tell you more next week.



CHAPTER III

The Minor Peculiarities of Active-Principle Therapeutics

THE difference between a living language and a dead one is, that the one is always changing, growing, developing, adding, subtracting, dividing; while the other is finished, fixed, unchanging, mathematically complete.

The system of active-principle therapeutics is like a living language. It is not only alive, but it is still in the process of making, growing, undergoing development. Hence it is not subject to any fixed and unchanging laws. Even the principles which I stated to you last week as fundamental might be worded quite differently by another, and may be changed by common usage in another decade. And so it is that, when we come to consider the minor peculiarities of the system, the best I can do is to state the case as it seems to me. My neighbor might with as good reason state it differently.

But as I have been a student and practitioner of active-principle therapeutics for twenty years, I shall exercise my right as an oldtimer to state its peculiarities as they seem to me, and leave it to someone else to make such changes in phraseology as he may desire or as future developments of the methods of practice may warrant. No one can speak with absolute authority in the matter.

Use Single Remedies and Simple Combinations

1. The first peculiarity to which I shall call your attention is *the predominant use of single remedies and of simple combinations*. And even this is not entirely a peculiarity of this system, as it is the common practice of

the Homeopathists and Eclectics, and the trend of recent usage in the regular school is decidedly in the same direction, and away from the shotgun prescriptions and countless combinations, secret preparations, and proprietary remedies in such favor a few decades ago.

Only by using a single remedy at a time is it possible to determine the action of that drug with any degree of accuracy. When you come to make the practical acquaintance of the drugs you use daily (and you must do this if you hope to be good therapists), you will find that it is a work requiring infinite pains and patience and manifold repetitions, at the best, to determine the action of any given simple drug. And when you come to combine with this one drug one or more other drugs of different action, the difficulties are increased in a geometric ratio.

When, however, the action of each individual remedial agent has been singly and definitely determined, it is then possible to build up with care a few standard combinations the components of which, while modifying, yet assist each other in their action. Also, on occasion, extemporaneous combinations may be made to meet the changing conditions under certain conditions; but beyond this, the majority of physicians will find it advisable not to venture.

I have known but one practitioner whom I felt that I could trust to write a complex prescription, with full confidence that he would combine the various ingredients so as properly to adapt the resulting compound to the conditions in question. This man was a master of his art and could see the end from the beginning. But for the most of us the single remedy is capable of doing better work than any complex prescription.

Definite Indications for Use

2. *Predicating definite indications for the use of remedies* constitutes the second peculiarity of our practice.

While it cannot be claimed that this feature is confined to the user of active principles, it surely is emphasized by him in his practice. He gives his remedies, *not for diseases* as such, but for the definite conditions which occur in the course of disease. When it is once determined what conditions of disease may be met by any remedy, then this remedy can be relied upon as of value wherever that condition is found. The skill of a physician is best shown in determining the exact condition which is met by any drug. As an illustration of this principle, I have been closely studying for ten years a little-known drug, i. e., *verbena hastata*, in the endeavor to determine its precise indications in cases of epilepsy. That is, I have tried to find out what class of cases and what characteristic symptoms were benefited by this drug, and which ones were not helped or might even be made worse. In this ten-years' time I have succeeded in developing five fairly definite indications—one for every two years!

The Granule the Preferred Form of Medication

3. *The soluble granule is chosen by us as the preferable form of medication in most cases.* Competent pharmacists declare that the soluble alkaloidal granule is the highest development of the pharmaceutical art. While I am not in any way capable of describing the method of their manufacture, I do know that the perfected result has many virtues. Small in size, always readily soluble in hot water, capable of retaining its full remedial virtues for an indefinite period, it may be given either in granule form followed by a drink of water or in aqueous solution, as may be preferred. It thus combines the virtues of liquids and solids.

Clean Out and Keep Clean

4. *The dogma of "clean out, clean up, and keep clean,"* as taught by Abbott and Waugh and practiced by their followers in America, is coming more and more

to be accepted as therapeutic gospel. It is based upon a recognition of the importance of autointoxication as a cause of disease, and of absorption from the intestinal canal as a prime cause of autointoxication.

Treatment begins with elimination from the intestinal tract: calomel and podophyllin, in small doses, and the laxative salines, being the favorite agents for this purpose. These are followed by or associated with the use of intestinal antiseptics. The endeavor is to produce, with these two classes of measures, not indeed complete intestinal asepsis, but that which is at least partial, and it is very effective therapeutically in most cases. The agents most commonly used as intestinal antiseptics are the sulphocarbolates of calcium, sodium, and zinc, either singly or in combination. The results of the use of these intestinal antiseptics in the treatment of typhoid fever and allied diseases is certainly very satisfactory.

There has been much discussion concerning the possibility of securing an aseptic condition of the intestinal canal. The active-principle therapist believes that, while it is admittedly impossible to secure and maintain absolute asepsis, yet the comparative degree which is attained makes it vastly easier for the defensive forces of the system to overcome the remaining millions of foes than it would be if their number were many times larger, as a result of a continued bathing of the intestinal canal in fecal poisons.

Seek Systemic Asepsis

5. *The importance of systemic asepsis and antisepsis* also is maintained as a companion doctrine to that of intestinal antisepsis. Of the numerous drugs which are used for this purpose, perhaps the most important are calcium sulphide and echinacea. It is found that many even of the contagious diseases may be prevented by saturating the system of the exposed persons with cal-

cium sulphide. I myself have repeatedly proved the power of this drug to prevent scarlet-fever, and have come to consider it a satisfactory substitute for quarantine in many cases. I will give you one illustration as typical of the whole.

A woman of thirty-five was taken down with scarlet-fever, which ran a typical and moderately severe course. During her illness, the house was strictly quarantined by the board of health, three persons besides the sick woman being confined therein during the whole time. These were her husband, her little daughter of some eight or ten years, and the husband's sister. None of them had ever had the disease, and all were confined in the house and went in and out of the sick room with perfect freedom from first to last.

From the onset of the disease, I saturated them all with calcium sulphide, giving one grain four times a day to the child, and six to eight times a day to each of the adults. The smell of sulphureted hydrogen was obvious in the breath of each one, and this is essential to the proper result. This course was continued until the patient recovered and the quarantine was removed.

Not one of the exposed persons contracted the disease. It may not be considered strange that the adults escaped, but the child would certainly have been expected to contract the contagion. I do not claim that this case, or any one case, proves anything absolutely, but I certainly feel that I have had enough such cases to justify me in relying upon calcium sulphide as a satisfactory systemic antiseptic and as a means of preventing contagious disease, in a large proportion of cases, at least.

Vasomotor Equilibrium

6. *The importance of the vasomotor system* in those congestions with which almost all acute diseases begin is emphasized in this system of medication, and has been

especially taught by Dr. Waugh. The latter makes the following assertion: "Circulatory disturbances herald the beginning of every acute attack and form an essential part of the phenomena presenting themselves throughout its course. Acute inflammatory attacks begin with a disturbance of the circulatory equilibrium. The affected part fills up with blood, which distends the capillaries, whose walls, relaxing under the increased pressure, afford an example of relative vasomotor paresis, being abnormally weak in comparison with the pressure to which they are subjected. But as there is no reason to suppose that the actual quantity of blood in the body has been increased, this overplus of blood in the distended capillary area indicates that there is too little blood in some other part of the vascular system. In other words, the vasomotor paresis in the hyperemic area is exactly compensated by a vasomotor spasm in some other vascular area."

It is for this reason that the fever remedies which are used by the active-principle therapist are selected; i. e., because they act on the vasomotor nervous system. Of this we shall learn more when we come to take up the subject of the treatment of fevers.

Selective Function of the Cell

7. *The selective function of the cells*, by which they are enabled to choose from the blood those elements which they have need of and appropriate them for the supply of their wants, while at the same time they reject all other elements and send them along to be used by such other cells as may have need of them, is another of the doctrines which guide the user of active principles in the intelligent choice of his remedies.

Stated a little more at length, the theory may be illustrated as follows: In the general blood stream, as it comes pouring out of the left side of the heart and goes

pulsing through the arteries to every part of the system, there is to be found every kind of matter that goes to make up the different tissues and structures of the body. There is oxygen to purify the blood and revivify the tissues, phosphorus for the brain and nerve-cells, calcium for the bones, nitrogen for the muscles, and the proper materials for all the different kinds of cells, serous, mucous, muscular, glandular—in short, the things which are needed for every part of the body.

Nor can the material which is intended for the nutrition of one part be made use of by any other part. Each cell claims for its own and takes unto itself that kind of material, and only that, which can be elaborated in its own factory and made up into the substances which it needs and uses in its daily life and work. Unto each part its own, and every part unto its own kind, is the law of life. So all through the different parts of the body this one fluid, the blood, goes coursing on its way, while at every station there are thrown off from the blood and taken up by the cells those particles of matter that are needed at this particular station, and only these. There is a selective affinity of each part for its own material. The hair-cells pick out with unfailling accuracy those substances which go to the making up of hair. The liver chooses only those materials which can be changed into sugar and bile, and the other liver materials and liver products.

Again, the quantity which is normally appropriated by any cell is the amount that is needed to restore and preserve the proper physiologic equilibrium, or proper balance, of the functions. As the processes of waste are always going on, so the repair of the tissues must go on apace, and these two are normally equal, no more being taken up by the cells that is needed to carry on the natural functions of the part, or than can be carried off by the organs of excretion.

To be sure, just as in nature everywhere we find a normal action and an abnormal one, so here there is such a thing as loading down the circulation with matter which is not needed by any of the tissues, yet which cannot be gotten rid of except by the regular physiological processes of nutrition, and hence it has to be taken up by the cells; and there is such a thing as overburdening the system with the best of materials, so that the cells will take up more than they need, more than they can properly dispose of. In either case, the result is that the functions dependent on these cells are depressed in their character, or are unduly stimulated, or are rendered abnormal. We then see symptoms of innutrition, of overnutrition, or of poisoning.

This scheme of adaptation is only in the line with what is done by reasoning creatures in meeting material needs every day, for there are none of us who live up to our light and knowledge all the time and under all circumstances. We all of us eat too much at times, and of improper food at that. If we did not, there would be few cases of colic, or typhoid fever, or gallstones, or rheumatism to treat. Nature carries on her operations automatically to a certain extent, it is true, but she makes false steps at times, and needs an intelligent mind to direct her in her work.

To carry this theory a little further, the principle which we have stated holds true not only for food and dietetic materials, but as to medicinal and drug substances. When active remedies are given in small amounts and repeated at the proper intervals only, we find that there is produced a definite effect (and if the drug administered was the indicated one in this condition, then it is a remedial effect) on some definite organ, tissue, or structure; while the other organs, tissues, and structures are apparently uninfluenced thereby.

To illustrate: Hydrastis has an especial action on the

mucous membranes; bryonia influences especially the serous membranes; jaborandi acts primarily on the sweat-glands and in a less degree on other excretory glands. Strychnine is the great nerve tonic, while iron builds up the blood; but, if too much strychnine or any other active substance is administered, it is not in the power of nature properly to dispose of the additional quantity, and harm results to the individual. The same is true of all remedial substances, in greater or less degree, in proportion to their activity and their power to accomplish good or ill.

In reliance upon this principle of nature, the user of the active principles does not hesitate to give aconitine and strychnine at the same time in a case of vasomotor congestion, knowing that the spasm will be relaxed by the action of the aconitine and the paresis be toned up by the strychnine, each without interfering with the action of the other, in accordance with the principle of the selective function of the cells. But, if the dose be increased beyond the ordinary medicinal one, then the cells may be overwhelmed and poisoned by the additional quantity.

Definite, Positive Results Are Sought

8. *Active-principle therapeutics aims to secure definite, uniform, and positive results from its use of medicaments*, and in order to do so two things are requisite. First, its remedies must be absolutely reliable; and this it aims to secure by the use of the active principles prepared in the granule form by reliable manufacturers. Secondly (and here I am only repeating, to emphasize what I have already said more than once), the man who uses these drugs must have a definite knowledge of the action of his remedies, of the symptoms which indicate both their remedial and its physiological action, and, also, must know the natural history of the diseased con-

dition which he treats, in order that he may understand what would happen if the case were left to nature, and what he desires to produce by medicinal treatment.

The best way that I know of for a young doctor to secure this knowledge is for him to sit the livelong night by the side of his patients, watching the symptoms with his own eyes, administering the remedies with his own hands, and storing up the resulting lessons in his own brain-cells. That is the way to become a good therapist. Especially it is the way to learn the successful use of the active principles in accordance with the methods which I am advocating.

Active-Principle Therapy Not Sectarian

9. *Active-principle medication, as a system of treatment, is not the basis for a new sect, 'ism, 'pathy or any separatist school of medicine.* Rather it seeks to obtain adherents among practitioners of every school, and without regard to any of these matters. It fights for its laurels on the firing-line of disease and proves its superiority by actual trial at the bedside. In order to enter its ranks, one does not need to renounce any old theories or take upon himself any new vows. It has no forms of initiation, no badge, no regalia. You read its literature, and, if its claims attract you, you send for a case of the granules and try them in your practice.

A friend of mine writes me that he carried his alkaloidal case around with him for a year or two before he dared to try its contents. Then he was called in consultation by a brother physician, to see a boy of eight or ten years, sick with pneumonia. The case apparently was an exact reproduction of that of an older brother, who had been sick then for some ten days, and later ran a long course of double pneumonia, with, still later, empyema and various other serious complications, but who finally recovered. The boy that he saw had been

sick thirty-six hours, had a temperature of 105 degrees F., pulse 140, respiration 50, with the middle and lower lobes of the right lung solid, with all the classical symptoms of pneumonia, including delirium, restlessness, and expectoration—"If I know pneumonia," he adds; (and, as he was a Harvard graduate, he must have known pneumonia!) The attending physician was at his wits' end and willing to try anything.

"Then," my friend says, "I gave the little fellow a defervescent granule, containing aconitine, veratrine and strychnine, every fifteen minutes for two hours, then one every half hour for four hours, then one every hour until the fever dropped, telling a competent nurse to watch results and act accordingly. The result was marvelous, however the skeptics may explain it, for the symptoms began to abate at once, and in forty-eight hours the temperature, pulse and respiration were normal, cough gone, mind clear, and patient quiet, except as he was 'hollerin' like a Tammany chief for something to eat. He made a quick and uneventful recovery."

And this is the way that a good many doctors begin the new way of treatment.

10. *Although the best title for our method is that of "active-principle therapeutics," yet the materia medica of the practitioner of this method by no means is confined to the active principles.* Instead, he uses any and every means and method which experience and experiment have shown to advance the end in view—which is, the welfare of the patient. He is not a sectarian, but a physician, who seeks out of the vast storehouse of nature those things, new and old, which will produce results.

11. *Its basic therapeutic maxim is, "The smallest possible quantity of the best obtainable means to produce a desired therapeutic result."* This is the phrasing of Abbott, and it covers the use of remedies of any and all kinds.

Just "Common Sense"

At the risk of having you reply to me that I am begging the question, I am going to claim boldly another peculiarity of this method and its practitioners, which I shall call *common sense in the use of remedies*. To illustrate what I mean, I will repeat a little story that used to be told by an eminent professor in the medical school from which I was graduated.

The story relates to one of the early graduates of the school, and is intended to show the need of common sense and good judgment in the practice of medicine. As the story was told long before the days of active-principle treatment, I must admit that it does not apply exclusively to their users today. Indeed, I am quite sure that the students and graduates of this school, whether or not they may accept all the principles which I have advocated, will agree with me as to the importance of this qualification.

As a student, the young man in question was a prodigy of information and never forgot what he had once been taught. On examination day, he was able to answer every question of the professors, to quote the opinion of any author whom he had studied, tell on what page of the book this opinion might be found, and repeat the very words in which it was expressed. As a graduate, he carried off the highest honors of the school, and as a practitioner he was expected to reflect honor upon his alma mater. After receiving his diploma, the newly fledged M. D. spent a few weeks with his former preceptor in medicine, visiting patients with him, as was the custom in those days, and observing carefully the treatment and its results.

Among the patients treated during this time was one who had typhoid fever. The patient was a robust and full-blooded man, in whom the fever ran high, as was

usual in such cases—a typical sthenic case, we should call it. The old doctor treated him according to the fashion of the times, with an emetic, a purge, and the lancet; then another emetic, a cathartic, and more bleeding; and finally winding up the antiphlogistic treatment with a dose of calomel and jalap, ten grains of each—“the double ten,” as it was called. The patient, being of a rugged constitution and well calculated to bear depleting measures, survived the heroic treatment, and soon recovered his usual health.

Soon after this young medico set up for himself in the practice of his profession. His field of labor was at a considerable distance from his former home, and more than a year had passed before he met his old preceptor again; and when he did, he seized the first opportunity—as you will do under similar circumstances—to talk of the remarkable cases with which he had been confronted during the year, and the wonderful cures he had performed. Finally he had made an end of these, and—“Now, doctor,” the young man continued, “there is one thing I don’t understand, and I wish you would explain it.”

“Very well,” said the old man, “state the case.”

“Well, doctor,” the young physician responded, “you remember that typhoid-fever patient whom you treated last summer when I was riding with you after I was graduated?”

“I do,” assented the other.

“You remember how you treated him?”

“Yes.”

“And he got well!”

“Certainly.”

“Well, doctor, I had a case just like that one; I treated the patient exactly as you did; and the man died!”

“Is it possible?” Died, did he?”

"Yes, he died; and I don't understand it. I wish you would tell me what the reason was."

"What kind of a man was he, anyway?"

"Oh, he was a little fellow, all weasened and dried up and thin."

"You are sure he had typhoid fever?"

"Oh, yes, all the symptoms."

"And you treated him just as I did my patient?"

"Exactly."

"And he died?"

"Yes, and I don't understand it."

"Did you give him an emetic?"

"I did."

"And bleed him?"

"Two or three times."

"And purged him?"

"Repeatedly."

"And wound up with calomel and jalap, ten and ten?"

"Yes, sir."

"And he died?"

"Yes. And, now, what was the trouble?"

The old man leaned back in his chair, drew a long breath, and seemed lost in thought for a few minutes. Finally he spoke.

"H'm! doctor, do you remember the old sorrel mare I used to drive?"

He did.

"Well, one morning in April, five or six years ago, I had to go out on the west road, through the woods and over the hills, some six or eight miles, to see a sick man. It was a warm morning, the frost was just coming out of the ground, and the road in some places was quite springy. Finally we came to a clayey piece of ground, and the old mare got stuck in the clay. The more she tried to get out, the deeper she got in, until

finally she was in almost up to her belly. I tried the best I could to help her out, but the more I tried, the more I *couldn't* succeed. At last I called to some men who were plowing in the field not far away, and they came over and helped me. We got some rails from off the fence near by, put them under her body, and so pried and lifted and pulled away until finally we got her out."

Pausing a moment to take breath, the old doctor went on again:

"I didn't have to go over that road again for six months, and that was late in the summer, and the roads were dry and hard. But the moment we came to the place in the road where she got in the spring before, the old mare stopped short and obstinately refused to budge an inch. I touched her up smartly with the whip, but she would not go on that way. I got out and tried to lead her over, but even that did no good. So finally I had to back her out of the road into the ditch, turn out into the fields, and let her go away out around the place where the clay-pit used to be, though now it was as firm and hard as any piece of ground on the road."

Here the old doctor ceased. His story was told, but young Esculap did not see the point.

"But, doctor, what has all that to do with my typhoid-fever case?"

"Young man, you were a good deal like that old mare. She had a most excellent memory, but d—d poor judgment. Circumstances alter cases, young man; circumstances alter cases."



CHAPTER IV

The Materia Medica of Active-Principle Therapeutics

I ONCE heard a physician say, after twenty years spent in the practice of medicine, that his faith in drugs grew less with each year of his practice. Incidentally I noticed that this same man used large amounts of powerful drugs, in spite of his skepticism. But what would you think of a mechanic who should tell you that the longer he worked at his trade, the less confidence he had in his tools? Either he uses poor tools, or he is an incompetent workman. If the fault is with his tools, let him get better ones. If the trouble is with him, let him serve his apprenticeship anew and learn to work with greater skill.

A competent workman ought to have the best tools obtainable, and he ought to become more skilled in their use and able to do better work with them the longer he uses them. The same thing is true with the doctor. It is a poor comment on his ability and skill if, after twenty years spent in the practice of his profession, he cannot do better work than when he first began.

Why Doctors Lack Faith in Drugs

It seems to me that there are two reasons which may account for our lack of faith in our remedies. One is, that we are not using the very best drugs to be had. Perhaps we are employing the crude drugs of our fathers' day, when we ought to be using the active principles of the twentieth century. From herb teas to alkaloidal granules is a long step, but it must be taken if we hope to secure the best results.

The other reason is, that we have not made ourselves masters of the drugs we use. We do not know them as we ought to, we cannot handle them as we should. We

do not know them, because we do not study them—as it is our business to do—carefully, critically, thoroughly, constantly. We do not have the skill in handling them that we should possess, because we lack that kind of practice which makes perfect. It is not the number of patients a man treats that gives him experience, but the amount of study, observation, and reflection he gives to each individual case. One man gets more experience out of a dozen cases than another does out of a hundred.

In my student days in medicine, I studied the general subjects of therapeutics and materia medica under two different professors in different schools. Both were excellent men, of good ability and attractive personality. One of them taught materia medica pure and simple—at least, that is the only part of which I have retained any recollection. The list of doses took up a good part of our time, and, so far as I was concerned, were soon forgotten. The origin and physical characteristics of the drugs were described minutely, but what good it ever did me is more than I can tell.

In the olden days, when the doctor gathered his own herbs and made them up into teas, tinctures and powders, such knowledge was a necessity; but now that the manufacturing pharmacist has taken all these things off our hands and we have to deal only with the perfected and prepared remedies, it seems to me that we waste valuable time in studying these things. As for the real science of therapeutics, he may have told us considerable, but he certainly did not teach me much—much that I have remembered, at least.

The other professor taught therapeutics, and he taught it well. I do not recall that he had much to say about doses or the physical properties of the drugs, but he did teach their uses. He grouped the more important ones into classes, such as cathartics, stimulants, sedatives, narcotics, and the like. Then he pounded away at the prin-

incipal uses, until we simply could not forget them. The differences between the virtues of opium and belladonna were explained with care, and then hammered into us, so that they remain in my memory to this day. I learned some things from this man that have stood by me all the years since. I remember that teacher with gratitude to this day.

Now, I have neither the skill nor the time to teach you therapeutics and materia medica in that way. All that I can do, all that I shall try to do, all that I want to do is, to mention briefly some of the principal drugs at present used by progressive physicians, and dwell particularly upon a few of the most important ones, especially those employed in the treatment of fever.

The Armamentarium of the Progressive Practitioner

The active-principle therapist chooses drugs which are small in dose, potent in effect, uniform and reliable in action. The majority of these remedies are the active principles of medicinal plants, which he uses more often than any others, and often uses them in a different way and for a different purpose than does his neighbor the crude drugs from which the principles are derived.

Nevertheless, it must be remembered that it is impossible to practice medicine successfully with the aid of granules alone; for there are quite a number of important remedies, such as the iodides, bromides, acetanilid, phenacetin, bismuth, the salicylates, the sulphocarbolates and many others, which have to be given in larger doses than can be incorporated in granules. For this reason the list which I shall present by no means will represent a complete materia medica.

Most of the remedies named are prepared in granules representing a minimum adult dose; and these, in acute diseases, may be administered every fifteen minutes, every half hour or every hour, according to the severity

of the attack, until some improvement is manifested or physiologic effects are produced. The medicines should then be given at greater intervals for as long as it is desirable to keep up the effect. By following this method closely, it is simply impossible to overdose the patient. You will also observe that the method is exceedingly simple, while the labor of committing a list of arbitrary doses is entirely done away with.

Aconitine and Veratrine, to abate fever. Standard granules; crystalline aconitine, 1-800 grain; veratrine, 1-128 grain. These two are the great fever-remedies.

The specific indication for aconitine in fevers is the small and frequent pulse; for veratrine, the full and bounding pulse. This is only another way of saying that aconitine is the preferable remedy in asthenic cases, and veratrine in sthenic ones. They are the remedies especially in the early stages of fevers and inflammation. When they are continued through the later stages, it is frequently desirable to combine with them certain other remedies designed to sustain the heart and nervous system.

For each of these two drugs there are other minor indications, some of them of considerable importance; but those named are the ones for which they are most frequently employed and the only ones of which we will speak at this time. The granules are best given dissolved in hot water, especially when quick action is desired; but under some conditions the granules may be swallowed with a drink of water.

Digitalin, to sustain the heart. Germanic digitalin is commonly used and is a mixture of three of the glucosides of digitalis; digitalein, digitonin, and digitalin. Standard granule, 1-64 grain.

Digitalin is the great cardiac and vascular tonic and stimulant. In moderate doses, it slows the pulse and increases the arterial tension, hence, is indicated when

there is a rapid heart-beat and a feeble pulse. It is contraindicated to some extent in aortic disease and in fatty degeneration of the heart. In certain conditions, it may be given in much larger doses than here stated. It may be administered hypodermically as well as by the mouth. By reason of its action on the heart, digitalin antagonizes to some extent the fever-processes and so often is given in combination with aconitine and veratrine for this purpose.

Strychnine and its salts, to combat vital prostration. The salts of strychnine most used are the arsenate, sulphate and nitrate,—the latter being the preferable one for hypodermic use. Standard granule, both of the sulphate and the arsenate, 1-128 grain.

Potter states that strychnine exalts all the functions of the spinal cord—reflex, motor, vasomotor, and sensory, the latter being least affected. When it is desired to secure its remedial effects, it should be given in minimum dose every half hour or hour until either the remedial effects or the earliest symptoms of the physiologic action—restlessness and trembling, with muscular twitchings—are manifest, after which it should be given in lessened frequency as long as necessary to continue its effect.

The Two Dosimetric Triads for Fever

These four drugs—aconitine, veratrine, digitalin, strychnine—are the great active-principle remedies for fever. Singly or combined they meet most of the indications, and do it with an ease and certainty not otherwise obtainable. To accomplish this more perfectly, two combinations have been added.

The Defervescent Combinations

The first of these is known as—

The Dosimetric Trinity. The formula of this combination is: crystalline aconitine, 1-800 grain; digitalin, 1-64 grain; strychnine arsenate, 1-128 grain.

The second of these is called—

The Defervescent Compound, and its formula is: crystalline aconitine, 1-800 grain; veratrine hydrochloride, 1-128 grain; digitalin, 1-64 grain.

By the action of the dosimetric trinity, the heart is sustained and the nervous system toned up. I know it often is taught—and presumably you have been so taught—that tonics for the heart and nervous system should never be given in fever until there are evident manifestations of failure of these organs. That is to say, digitalis should not be given until there are signs of heart failure; strychnine not until vital prostration supervenes. This seems to me like saying that a man should not go to work to earn any money until his means are entirely exhausted, or as if a doctor were to advocate going without food until serious weakness had set in.

Let us take a case of serious febrile disease, pneumonia for example. If we know anything of the natural history of this disease, we know that its usual course is to go on until the vital forces are prostrated, and that the especial danger to be expected is from weakness of the heart. Is it, then, the wise course to employ no measures to guard against or to prevent this condition?

Shaller, speaking of strychnine, says: "All schools of physicians use but one medicine to stimulate paralyzed nerves and to restore paralyzed muscles, and that medicine is strychnine. There is no other medicine but strychnine that can so effectually stimulate the vital functions and arouse nerve-force. If strychnine is a proper remedy to use to cure paralysis, it is also a proper remedy to use to prevent paralysis." The same or a similar argument may be advanced with reference to digitalin. Both these remedies many times are given in conditions of comparative health, and are considered the best tonics we possess for their respective purposes.

Given, then, a fever which, if unchecked, is sure to produce the conditions calling for strychnine and digi-

taline, it seems to me that it is the part of wisdom to use them in minimum doses before the danger is imminent, and thereby prevent in many instances the urgent demand otherwise evidenced later in the disease.

In the treatment of fever, then, the remedies at our command will be utilized in the various conditions somewhat as follows:

In the early stages of fevers not of a sthenic type, give aconitine; if markedly sthenic, veratrine; if the fever is high, the pulse full and bounding, and the patient a vigorous adult, the defervescent compound; if the conditions are asthenic, and the patient not vigorous, or in any case where there is reason to anticipate heart weakness, and always in old persons, the trinity granule. As the fever progresses, change from the one to the other as conditions may indicate.

And remember, that you do not need to wait for the diagnosis of typhoid fever or scarlet-fever or pneumonia before beginning this, the essential, treatment of the febrile process. A definite diagnosis, as it shows additional symptoms and conditions, will call for additional remedies; but the essential fever is the same in all and requires the same treatment.

Two Valuable Expectorants

Apomorphine and Emetine, as expectorants and emetics, each with special indications for its use.

As an emetic, apomorphine is best given hypodermically, in doses of 1-16 to 1-10 grain. As an expectorant, it is specially indicated where the sputum is thick, viscid, and tenacious, when it may be given every fifteen minutes until relief or nausea.

It is well to bear in mind that apomorphine gradually turns to a light-green color this gradually deepening to a dark green, this being hastened when it is exposed to the air. This discoloration may be prevented by the

addition of a few drops of vinegar to the solution; still, there is no evidence that the medicinal properties of the drug are at all affected.

Emetine possesses to a certain extent the properties of ipecac, but is less irritating and causes less disturbance of the digestive tract. It is seldom used as an emetic. As an expectorant, it is indicated by deficient bronchial secretion, with tough and adherent sputum, and a dry, harsh cough.

Emetine frequently is combined with apomorphine, and to these two may be added codeine, in similar dosage, more especially when there is an irritative cough. This makes one of the most effective and reliable cough remedies of which I have knowledge, and it can be prepared in a few minutes at the bedside.

A Group of Useful Laxatives

Aloin, Calomel, and Podophyllin, to increase the secretions of the various portions of the intestinal tract. Standard granules: aloin, 1-12 grain and 1-6 grain; calomel (usually given in tablet form), 1-10 grain; podophyllin, 1-64, 1-12 and 1-6 grain.

Saline Laxative, as a laxative and cathartic of almost universal applicability. A granular effervescent preparation of sulphate of magnesium. An indispensable aid in "cleaning out, cleaning up, and keeping clean" the intestinal canal.

Salithia, same as the above with the addition of one grain of lithium carbonate and 1-250 grain of colchicine to each 90 grains or full dose of the finished product. This is especially desirable in conditions showing the "uric acid diathesis," and wherever a diuretic action is desired.

Anticonstipation (Waugh) is another compound granule of great efficacy in all forms of chronic constipation. Formula:

Aloin, gr. 1-25; strychnine sulphate, gr. 1-500; atropine sulphate, gr. 1-2500; capsicum oleoresin, gr. 1-500; emetoid, gr. 1-500; bilein, gr. 1-250. Should be given in sufficient number (three to six or more) three times a day before meals to produce one daily stool, continuing steadily and reducing very gradually as curative results are secured.

Atropine, Hyoscyamine, and Hyoscyne Hydrobromide, to combat spasm and to allay irritability. Standard granules: atropine, 1-500 grain and 1-250 grain; hyoscyamine sulphate, 1-1000 grain; hyoscyne hydrobromide, 1-1000 grain. All these belong to the mydriatic group.

Atropine is a cardiac and respiratory stimulant, relaxing the minute capillaries and sending the blood to the surface. Hyoscyamine is mildly hypnotic and sedative. Hyoscyne is more powerfully sedative and hypnotic, and is indicated in all motor excitation.

Berberine and Quassin, as simple bitters of general applicability. Standard granules: berberine, 1-64 grain and 1-6 grain; quassin, 1-64 grain.

Berberine is the most widely distributed bitter principle in the plant-world. In addition to its valuable properties as a stomachic tonic, it possesses the property of constricting connective tissue, this rendering it of exceptional value in all relaxed and catarrhal conditions of mucous membranes. Quassin is one of our best stomachic tonics.

Agaracin, grains 1-12 and 1-2, to arrest perspiration. Our best agent in night-sweats.

Anemonin, grain 1-128, a camphor from anemone pulsatilla, has a special action on the generative function in women, producing an increased menstrual flow when used near the menstrual period.

Anodyne for Infants (Waugh) is used in the pain

and restlessness due to indigestion, teething, and other causes. As a remedy in diseases of children, it has a wide range of uses, and is one of the most popular of the compound granules. The formula is:

Nickel bromide, gr. 1-128; codeine sulphate, gr. 1-64; emetine hydrochloride gr. 1-5000; lithium carbonate, gr. 1-16; oil of anise, q. s.

Cactoid, a concentration from cactus grandiflorus, as a valuable heart tonic. While of proven efficacy, cactus in medicinal dosage is without appreciable physiologic action, and for that reason condemned by so-called authorities. Cactoid is especially indicated in irregular pulse and nervous conditions of the heart. Standard granules, 1-128 grain and 1-64 grain.

Caffeine, as an unequaled brain stimulant. It promotes the flow of thought and increases the mental activities, without being followed to any considerable degree by depression. The salts (so called) of caffeine in vogue are the arsenate, benzoate, citrate, and valerate. Standard granules of either: 1-64 grain and 1-6 grain. Very much larger doses may be given, though. The sodium benzoate is best adapted for hypodermic use, for which purpose the ordinary dose is 1 grain.

Two Systemic Antiseptics

Echinacea and Calcium Sulphide, as our best systemic antiseptics. Both drugs are of great value in averting and overcoming sepsis in its various forms. The standard tablet of echinacea (echinacoid) is 1-2 grain; and the standard granule of calcium sulphide is 1-6 grain. Calcium sulphide, however, may be used freely in 1-2- and 1-grain doses. Nevertheless, Doctor Abbott claims, and experience amply has proven, that the granule form preserves the virtues of the sulphide far better than when made into tablets. Moreover, there is a vast dif-

ference in the quality of the various preparations offered the doctors—some being utterly worthless.

Arsenic, in its several forms, as the great alterative. The salts of arsenic commonly employed are the bromide, iodide, and sulphide. Standard granule of either, 1-64 grain.

Coniine (Cicutine) and Solanine, as antispasmodics and motor sedatives. Standard granules: coniine (cicutine) hydrobromide, 1-64 grain; solanine hydrochloride, 1-64 grain and 1-6 grain. Solanine is especially valuable in some cases of epilepsy.

Codeine and Morphine, as anodynes. Standard granules: codeine, 1-64, 1-12, and 1-6 grain; morphine hydrobromide, 1-64 grain; morphine hydrochloride, 1-64 grain, and 1-12 grain; morphine sulphate, 1-64, 1-12, and 1-4 grain. Codeine is especially valuable in irritative coughs.

Copper Arsenite and Zinc Sulphocarbolate, as intestinal antiseptics and as antizymotics. Standard granules: copper arsenite, 1-1000 grain and 1-250 grain; zinc sulphocarbolate 1-6 grain. Also, tablets of zinc sulphocarbolate; 1, $2\frac{1}{2}$, and 5 grains.

Ergotoid, Hydrastine, and Hydrastinine, to constrict unstriated muscle-fiber, as well as to quicken the heart. Standard soft mass pills of ergotoid, 1-6 grain. Standard granules of hydrastine, 1-64 grain; of hydrastinine hydrochloride, 1-12 grain.

Scutellaroid and Cypripedoid, concentrations of skulleep and lady's-slipper, respectively, as mild sedatives, anodynes and nervines. Standard granules: scutellaroid, 1-6 grain; cypripedoid, 1-6 grain.

Iron, and its salts, to enrich the blood. Standard granules of the salts of iron, 1-64, 1-12, and 1-6 grain.

Quinine, and its salts, to antidote malaria. Standard granules of quinine arsenate, which is the salt preferred by dosimetrists, 1-64 and 1-6 grain. Burggraefe claimed

that quinine heightens the tonicity of the tissues; and this perhaps may account for its action in preventing and aborting colds.

Nuclein and Lecithin, to strengthen the defensive forces of the system. Dose of nuclein, 1-2 to 2 drops; of lecithin, 1-2 grain.

Glonoin, to relax the capillaries and quicken the heart. Standard granule, 1-250 grain. This remedy acts very quickly when given by the mouth—more so when absorbed from the buccal cavity.

Arbutin, to remedy all catarrhal and suppurative conditions of the mucous membrane of the genitourinary system. Standard granules: 1-64 grain and 1-6 grain. Tablet, 1 grain. In small doses arbutin is diuretic and tonic to the mucous membranes; in medium doses, useful in subacute and chronic cystitis and to restrain the loss of albumin in nephritis and pus in pyelitis and other forms of pyelitis. In large doses, a stimulating diuretic, and strongly antiseptic. Useful in cystitis.

Aspidospermine, to relieve dyspnea of every kind—bronchial, cardiac or nervous. This alkaloid from quebracho sometimes is called “the digitalis of the respiratory organs.” Standard granules, 1-64 grain.

Bryonin, to stimulate absorption and relieve pleuritic pains. A remedy for serous membranes. Standard granule, 1-64 grain.

Cantharidin, to overcome atony of the bladder. Standard granule, 1-5000 grain.

Gelseminine, to combat febrile conditions, when associated with bright eyes, flushed face and great nervous tension. A remedy especially in diseases of children. Standard granule, 1-250 grain.

Pilocarpine, to produce diaphoresis. The most powerful agent for this purpose that we possess. Standard granule (of the nitrate) 1-64 grain.

Potassium Dichromate acts as an alterative to mucous

membranes, particularly of the respiratory tract. Standard granule, 1-64 grain.

Sanguinarine acts as a general tonic and expectorant; also is a sexual stimulant. Standard granule, 1-64 grain.

Iodized Calcium (Calcidin), to combat membranous laryngitis (true croup), catarrhal laryngitis, and all forms of colds, especially those affecting the throat. Iodized calcium (Calcidin) also produces the systemic effects of iodine without giving rise to the phenomena of iodism. Standard tablets, 1-3, 1, 2½ and 5 grains.

Creosote, to serve as a respiratory antiseptic and an antituberculosis remedy. Standard granule, 1-64 grain.

Phytolaccoid acts as an alterative and absorbent in glandular enlargements. Standard granule, 1-6 grain.

Salicin acts as a sexual sedative. Standard granule, 1-6 grain.

A Few Reflections

It will be observed that in a considerable proportion of the remedies named only one single use, either a general or a special one, is named for each drug. This is in accordance with the belief that it is advisable to select the most important action of any given drug or the object which it serves in a more direct and positive way than does any other drug, and to make this the keynote for that remedy.

Thus, for instance, we have "quinine, to antidote malaria." Now, quinine serves many other purposes, some of them quite important; but not one of the unnamed applications compares in importance with this particular one, while in no other condition are the results so superior to those which can be secured by means of any other known drug as in this common and serious condition of malaria. Then there is glonoin, "to relax the capillaries and quicken the heart." In the case of this drug the purpose named is practically its only use,

but it fulfills that far better than any other known remedy, at least in an emergency.

By adopting this plan, the principal use of a drug is readily learned and quickly brought to mind when required. Moreover, the other and minor uses will easily take their places as they are needed. Still other drugs are used practically for only one indication, and that a limited one. For example, agaricin is useful to prevent excessive perspiration (night-sweats); and this is the favorite, although there are other drugs for that condition. I am not aware that agaricin is prescribed for any other indication.

It would seem, then, that the natural method of studying drugs is the best one. Find out first its most important use, the purpose which it serves better than any other remedy. As other uses are developed, let them take their proper places.

Sometimes, however, a more perfect knowledge lessens, instead of increasing, the number of uses of a drug. Thus alcohol was formerly recommended for nearly every diseased condition known to man. It was thought to protect one from the cold of winter and from the heat of summer; it was used to strengthen the weak and to comfort the afflicted; to increase the appetite and promote digestion; and to take the place of food and prevent the pangs of hunger; to relieve pain, assuage grief, overcome melancholy; to prevent heart failure, bring about reaction in shock, bridge over the crisis in fevers, destroy the germs of infectious disease.

But of late years physicians have gone more closely into the physiologic action of alcohol, while they also have learned more of other substances to produce the various results formerly thought to be secured by this one; with the result that the internal remedial uses of alcohol are now practically limited, among up to date scientific physicians, to two—to dilate the capillaries

and quicken the heart, in small doses, and to benumb the sense of pain and produce easy death, in larger ones. But even here the first-mentioned use is better met by nitroglycerin, and the second by morphine. We now have perhaps a dozen drugs, each of which takes the place of alcohol in some one of its uses, and does that work better; no one of them, though, will accomplish all the results ascribed to alcohol.

The Value of Experimentation

As practitioners of medicine, after passing your examinations, it will be your privilege, and, I believe, your duty as well, to be real students of the action of drugs. You should not only learn what the books have to tell you of these things, but you should try to enlarge to some extent the bounds of knowledge. To illustrate how you can do this.

For the last ten years I have been studying experimentally the properties of a little-known drug, the *verbena hastata*. This is not a very important drug—it is not even entitled to be called a drug of the second class. Most of the uses which formerly were ascribed to it by the few books mentioning it at all are better met by other remedies. But I learned, a dozen or more years ago, that someone had used this humble herb—the blue vervain—with apparent success in certain cases of epilepsy. Now, epilepsy is a disease in the treatment of which a large number of remedies have been tried, but not one of them with any great satisfaction (even the bromides often do more harm than good), and so it seemed to me that the claim was worth trying out. Just to what forms of this malady the herb was best adapted, no one seemed to know—and this, then, was the problem which I set for myself to solve.

I began to prescribe the *verbena hastata* for a woman who just then had been made distinctly worse after a course of the well-known “compound-bromide treat-

ment.” The result of my experiment was favorable—so favorable, indeed, that the patient has continued the use of the verbenin from that day to this, for the reason that, while it did not wholly cure her, it has enabled her to control the manifestations of the malady more fully than any other treatment she has ever tried, and that with absolutely no unpleasant by-effects. I then tried this remedy in the case of another patient, who had been somewhat improved under the bromide treatment, but desired to avoid the very unpleasant incidental effects of that drug. Here verbenin not only failed entirely, but made the patient distinctly worse.

As a result, I adopted tentatively as my first indication for giving verbenin: “when patients have been made worse rather than better by the bromides.” That was a broad rule, but the experience in ten years of further trial of the remedy has confirmed it. Meanwhile I have continued my study of the action of the drug in similar cases, until I now have five indications by which to judge as to its applicability; and further use will, no doubt, develop others, and perhaps modify some of these five.

In the meantime I came upon another drug—*solanum carolinense*—of greater power, but very unlike in action, which I have found to fit in a large number of those cases in which the patients were not helped by verbenoid; so that in these two drugs, *verbena hastata* and *solanum carolinense*, or their representatives, I have been able to benefit a large proportion of all the epileptic patients who have come under my care. But, in all my use of these remedies, it has been my constant study to determine the special indications, or, if you please, the particular class of cases, for which each one was fitted. It is in this way, it seems to me, that every physician can and should do his part in broadening the common knowledge of our profession.

CHAPTER V

The Active-Principle Treatment of Pneumonia

PERHAPS I can conclude what I have to say to you about active-principle therapeutics in no better way than in giving you a few practical illustrations of its application to everyday disease; and in doing this, I am going to begin with that most common, serious and fatal of all our acute diseases, pneumonia. My reasons for this are, first, that I know of no disease which it is more important for you to be able to approach with confidence and handle with success; and, secondly, that the treatment which I shall describe has in this disease won its finest laurels.

"Pneumonia is a self-limited disease and runs its course uninfluenced in any way by medicine. It can neither be aborted nor cut short by any known means at our command." Such is the dictum of Osler, who is perhaps the most widely known English-speaking medical teacher in the world; and through the influence of his great name it has obtained wide circulation and a very general acceptance.

However, this idea is the emanation of the rankest drug-nihilism, pure theory from the prince of drug-nihilists. It reduces the doctor to the position of a very inferior grade of head nurse, whose duty it is to watch the patient's symptoms while he is dying and then to certify solemnly that there was no help for him.

The active-principle doctor does not accept this dictum, does not believe this theory. He believes that it is his duty to *do something* in the sick-room. More than that, he believes that it is in his power, not only to lessen suffering, but to modify disease and to lengthen life. He is the kind of doctor whom I want to attend me when I am sick. I leave it for you to settle it for yourselves whether or not you agree with me.

The way in which the theory of Osler works out in practice is well illustrated by a story told by a well-known physician at a medical meeting in my home town, some years ago, when the members present were discussing the different methods of treating pneumonia.

A Personal Experience

When this doctor was a senior medical student and was just entering upon the first day of his service as interne in a large hospital he was confronted by what he diagnosed as a severe case of pneumonia, and he naturally felt in a quandary as to what he should do for it. Not being able to settle the question to his own satisfaction, he waited with some impatience the coming of his instructor on his daily rounds. This worthy soon made his appearance and questioned our novice as to the nature of this patient's disease. The young interne replied that he thought it was a case of pneumonia, and he anxiously asked what he ought to do.

"Hm-m-m," was all the learned professor vouchsafed, passing on to his next patient.

Fearful that something was wrong, the interne followed after him and repeated his question.

"Hm-m-m," again hummed the instructor, as he appeared to be wholly absorbed in the case at that moment before him.

Seeing that it was impossible for him to get any satisfaction at this time, the young doctor waited until the professor had finished his rounds and was about to take his departure, when he screwed up his courage and approached him once more, repeating the inquiry, what he should do for his pneumonia patient.

"Y-y-young m-m-man," replied the professor, who was an inveterate stammerer, "it m-m-makes such a d-d-d-damned little d-d-difference what you d-d-d-do in

these cases that I have d-d-d-decided to let you experiment for you-you-yourself."

"And," added the doctor as he told us the story, "I have been experimenting ever since."

If, now, young ladies and gentlemen, you can get some ideas that will enable you to approach your first case of pneumonia with something of a definite idea of what you want to do, and how it can be done, you will find that this frame of mind will give you a great advantage over that of the man who accepts the Oslerian doctrine that it makes no difference what you do. You will have confidence in yourself; and this will get you the confidence of your patient and his friends. These two combined will prove to be the fulcrum upon which you can rest your lever of active-principle medication and move the world. For to *you*, to cure your patient, is to move the world.

In the treatment of pneumonia (or, for that matter, of any other disease), you have to consider three things: (1) the patient, because no two persons are alike in appearance and constitution or in physical vigor and the power of resisting disease; (2) the disease, because the severity of a disease depends in part upon the intensity of the infection, and the same disease varies in its manifestations at different times and under different conditions; (3) the treatment, because no two persons require exactly the same treatment, even when the symptoms are practically the same; and, also because similar results often may be produced by different methods of treatment.

Use the Best Obtainable Remedies

And right here let me say that, while I am advocating what we call the active-principle treatment of disease, it is no part of my purpose to urge you to confine yourselves strictly to the use of the so-called active prin-

ciples. What we want is, not so much active principles, as the best obtainable remedies.

We advocate this treatment because we believe that in the main, not only the remedies used, but the manner in which they are employed, are such as will produce better results than any others with which we are acquainted.

But we do not confine ourselves strictly to any one class of remedies, nor do I advise you to do so. We are practicing medicine, and our business is to cure our patients. If you can find any remedies that will produce better results—any medicinal principles more potent for good—than those I have described, by all means use them.

It is only in this spirit that we can have any progress in medicine. You must mix your remedies—"with brains," as the great painter mixed his colors; you must treat your patients with the aid of common sense and good judgment, remembering that "circumstances alter cases."

The first essential for the most successful treatment of pneumonia is that the physician should be called early—before the case is fully developed or all the classic symptoms have made their appearance. Nor, under those circumstances, should he wait for the further development before beginning active measures of treatment. To wait until it is possible to make a positive diagnosis, is greatly to lessen your chances of success.

Remember the teaching of Burggraave, that the great end of dosimetric medicine is "*the prevention of anatomic-pathologic lesions*, for these, once established, are above the resources of art." Put this over against the dictum of Osler—and choose for yourselves.

A positive diagnosis can be made only when the symptoms are typical or the disease is well advanced. The early chill is characteristic, but in twenty percent

of the cases it does not occur. Rapid respiration is common; still, the variation in this respect is so great that it is not safe to rely upon it. The quick pulse is not found in every instance. Even high temperature is not always present, and its absence has come to be recognized as a distinctly unfavorable symptom. Many patients have little or no pain in the chest from first to last, and sometimes there is almost no cough, even the rusty sputum being absent in a considerable number, especially in the aged. The crepitant rale, when well marked and persistent, is considered almost pathognomonic, but this sign sometimes is absent.

So, do not wait for the occurrence of all these classic symptoms, but, when you find enough to indicate congestion of the lungs with fever, go to work at once to prevent, if possible, that further progress of the disease which alone will render a positive diagnosis possible.

If there is a feeling of oppression and tightness across the chest, with pain and difficulty of breathing, I know of no better remedy than a mustard poultice applied to the affected part and allowed to remain until pain is relieved and the breathing easier, when it may be replaced by an antiphlogistine poultice or a cotton jacker. If there is no pain or difficulty of breathing, the antiphlogistine—or any other “clay poultice”—may be applied at first. Under these conditions, many physicians prefer not to make use of any external applications whatever.

In nearly all cases of pneumonia a thorough clearing out of the intestinal canal at the outset is desirable. In cases characterized by constipation, nausea, and a coated tongue, you may give 1-6 grain each of calomel and podophyllin every half hour until a grain has been taken, and follow in two hours with a heaping tablespoonful of a laxative saline. Or, if the case comes into your hands at night, you may give a single dose of

a suitable purgative, such as the "triplex pill," composed of aloes, blue mass, and podophyllin; and in the morning follow with the usual dose of the saline laxative.

In either of these ways, or in various others, you will be pretty sure to secure thorough elimination, which is an important point. After this, the bowels should be kept clean, securing at least one free movement each day, and for this purpose the saline laxative is often sufficient.

To Reduce High Temperature and Relieve Congestion

We come next to measures for the reduction of the temperature and the relief of congestion, using for this purpose remedies acting through the vasomotor nervous system. The great active-principle vascular sedatives are aconitine and veratrine, either alone or combined with the tonic alkaloids strychnine and veratrine, as in the dosimetric trinity and the defervescent compound.

In children, in delicate women, in the weak, the aged, the debilitated, and in all patients showing a tendency to asthenia, the preferred remedy is aconitine. So far as the pulse is concerned, the special indication for aconitine is the small and frequent pulse.

Veratrine, on the other hand, is the remedy of choice in strong and vigorous adults, and in all subjects showing symptoms of a markedly sthenic character. Its special indication is a rapid, full, and bounding pulse. In the same case veratrine may be required at one stage of the fever, while aconitine is called for at another.

Both these remedies are of the greatest utility in the early stages of fever, and as a rule neither one should be given in the later stages, or in any stage of cases marked by great debility and lack of vitality, except as guarded by one or both of the tonic alkaloids, strychnine and digitalin. Indeed, knowing that if the disease runs its

course the greatest danger in pneumonia arises from the strain upon the heart, the alkaloidist deems it wise to guard against any weakness in this direction from the first, and therefore often prefers to use the dosimetric-trinity granule from the first in all severe and markedly asthenic cases, and the defervescent granule in sthenic cases.

The standard granule of aconitine hydrobromide is 1-800 of a grain, and of veratrine, 1-128 grain. These are the minimum adult doses, and are best given dissolved in a teaspoonful of hot water. If the fever is 103° F. or higher, this dose may be given every fifteen minutes for a few times, then every half hour until the fever begins to lessen, as shown by the tongue becoming moist, the pulse softer and slower, and the temperature lower. When this effect has been produced, the remedy may be given every hour as long as it is considered necessary to continue the effect. If the initial fever is below 102° F., give the dose only half-hourly from the first.

These are general directions, to enable you to make a beginning. But always remember that there is no fixed or arbitrary dose or frequency of administration, *the only object being to produce the desired effect*. Some patients are affected very easily, others only with great difficulty. Some people are very hard to sweat, but I have noticed that even in these cases the fever generally declines in about the usual time under the influence of these remedies.

Strychnine and digitalin are tonic remedies and their use is well understood by medical men of all schools. Strychnine is the great nerve tonic, and is especially indicated where there is imperfect or enfeebled respiration or a condition of general relaxation of the whole system. Digitalin is the great cardiac tonic, strengthening the heart and slowing the pulse. When

given alone in considerable doses, it may sometimes be objectionable on account of its tendency to increase the blood pressure, but when combined with aconitine and strychnine, as in the trinity granule, this effect is prevented. The standard granule of strychnine arsenate is 1-128 grain, and of digitalin, 1-64 grain; and these doses may be given with perfect safety in the same frequency as the aconitine and veratrine, when combined with these drugs.

There is one other active principle which I have learned to use in those cases of pneumonia which are complicated with pleurisy, as shown by a sharp "catching" pain in one or the other side when breathing. This is bryonin, a glucoside derived from *bryonia alba*, a remedy of which you probably know very little. It is a remedy for serous membranes, and is especially indicated in pneumonia when there is felt a sharp, cutting or stabbing pain in the side, made worse by motion.

I will mention one other remedy which I have used with much success in the treatment of pneumonia, and which I desire to recommend to your favorable attention, although I do not claim that active-principle therapy has any mortgage on it.

General Antiseptic Treatment in Pneumonia

If pneumonia is a germ disease, as is now universally accepted to be the case, then nothing can be more appropriate than an antiseptic treatment. For this purpose I know of no more effective agent than creosote, which is eliminated largely by the lungs, and is entitled to be termed a respiratory antiseptic. Sajous declares that creosote is as nearly a specific in pneumonia as is quinine in malaria. Beverley Robinson, of New York, was one of the first to advocate its use in lung disease. Van Zandt, of Texas, has been especially prominent in recommending its use in pneumonia. He has found it to

abort a considerable proportion of cases, to modify favorably the symptoms and shorten the course of a still larger proportion, and only in a small proportion to fail of influencing it in any way.

Creosote carbonate is the preparation commonly used. Sajous gives it in 10- and 15-grain doses every two or three hours. Van Zandt gives two and one-half drams in twenty-four hours as an average adult dose, and divides this amount into either two or four doses. My own experience has been with the preparation known as thiocol. This is a made-in-Germany, patented preparation, chemically known as the guaiacol sulphonate of potassium.

The main advantage which I find in this, over the cruder preparations of creosote, is the fact that it has very little taste, and may be given in any desired dose without disturbing the stomach. A great disadvantage is that it is still sold at the high price of patented preparations. I give it in 5-grain tablets, two tablets every four, three, or even two hours to an adult, and I have never had any bad symptoms. It is a valuable addition.

Reasons for Failures in Practice

With the treatment thus briefly outlined, it is possible to abort a considerable proportion of cases. That this result cannot be secured in all cases, is due to one or more of the three following causes:

1. Lack of vitality in the individual, so that the system does not react favorably to the medicine.
2. Unusual intensity of the infection, such that the vital forces are overwhelmed by the first onset of the poison.
3. Late beginning of the treatment or lack of thoroughness in carrying it out.

But even when the fever is not aborted, the course of the inflammation is almost always favorably modified,

and it runs a shorter course than when left to nature, with fewer alarming symptoms and far less danger of failure of the vital forces than is seen when the coal-tar products and other depressing remedies are used.

After the crisis is passed and the fever is gone, only a condition of weakness and depression remaining, it is better to omit the aconitine from the dosimetric trinity and to rely upon the tonic effects of strychnine and digitalin alone.

You will observe that from the beginning we have guarded against danger from weakness of the heart, using for that purpose the tonic remedies strychnine and digitalin. Add one other needed drug, and most of the cardiac dangers in pneumonia may be satisfactorily met.

Glonoïn, or nitroglycerin, is the great emergency remedy, relaxing the tense arterioles, and letting the blood go free when the heart is overburdened. With the active-principle therapist this drug takes the place of alcohol, in a very large degree, compared with which he finds it quicker in action, freer from danger, and more satisfactory in results. Instead of the usual dose of 1-100 grain, he prefers the dose of 1-250 grain, in granule, repeating this as may be needed to secure the desired result. This is one drug which is said to act more quickly when absorbed from the mouth than when injected subcutaneously. When properly used, it works wonders.

Treatment of the Cough

The cough of pneumonia seldom requires more than four drugs, and these are emetine, apomorphine, codeine, and calcium sulphide. Emetine is especially indicated by deficient secretion; apomorphine by a thick, viscid, and tenacious secretion; codeine by the cough of irritation as distinguished from the cough of expectoration; and calcium sulphide by a hoarse, harsh, hard cough.

with putrid secretion. The dose of emetine and apomorphine each is 1-64 grain, and that of codeine may be 1-64 or 1-12 grain, according to the nature of the case. They may be given either separately or combined, in aqueous solution, every fifteen to sixty minutes, as indicated.

I have come to depend upon this mixture, which I call the A-C-E mixture, for use at the bedside, to loosen a tight cough, to the exclusion of almost everything else. The calcium sulphide is especially useful in the cough of bronchopneumonia, measles, whooping-cough, and the like. It is best given in 1-6-grain granules every hour, and may be given without dissolving, care being taken to take a few swallows of water with each dose.

I can only give you the outlines of the use of any of the remedies named. You must learn their more intimate uses from your own experience, by getting used to them. Then you will know what they will do.

You will see that my idea of a drug to be used in the treatment of disease is something like that of a friend whom you depend on for help and comfort in the work of life. You must get acquainted with your drugs before you can use them to advantage, before you know what they will do, and how long they will last. If they are the real thing, the more intimate your acquaintance with them the better you will like them, and the more you will learn to depend upon them. If they are only shams, you will soon find it out, and the sooner you get clear of them the better.

Drugs are like friends in another respect. It is better to have a few good ones, old friends that you know and can depend upon, than a host of new ones, passing acquaintances, "said to be good," "highly recommended," but not known to you from your own experience.

I have not spoken of the importance of fresh air and

plenty of it, of bathing, good nursing, proper nourishment, and many other things essential to the proper treatment of pneumonia, because their importance is recognized by all physicians, and their use is not confined to one school of medicine or system of practice. These things play an important part in determining issues of life and death.

Now—to sum up:

The active-principle treatment of pneumonia should begin early. Its first aim is to abort the disease.

For the digestive tract: “Clean out, clean up, and keep clean.” Calomel, podophyllin, and salines are the preferred laxatives. Give liquid nourishment. “Keep on the right side of the stomach at all hazards.”

For the pulmonary congestion: Counter-irritation by mustard; depletion by antiphlogistine.

For the fever and the heart: Aconitine and veratrine; strychnine and digitalin; glonoin.

For the cough: Apomorphine, codeine, emetine, calcium sulphide.

For pain: If slight, counter-irritation, codeine, bryonin; if severe, morphine hypodermically.

Watch the patient. Dosage to effect. No alcohol.

A Word in Conclusion

In finishing this course of lectures, young gentlemen, let me say to you that the different diseases which we have considered have been selected only as illustrations of the methods of applying the therapeutics of the active principles. They are not necessarily the most common, or even the most important that could have been selected. They are simply those in which I have had a fair share of experience, and for which I have somewhat definite ideas and methods of treatment to suggest. Let me urge upon you, as you go out to begin your work in caring for the sick, the importance of making use of the

most definite, positive, and dependable means and methods at your command.

It is a far cry from the herb teas and powdered roots of our grandfathers to the potent chemicals and active principles which are at our own command today.

The old therapeutics was a mass of undigested facts, mostly clinical, dealing with remedies uncertain in their action, and not to be depended on as to their results. The new consists of a compact body of knowledge, both clinical and physiologic, relating to drugs which are definite in their action, and whose effects are well ascertained and always to be relied upon. The old remedies were bulky and largely inert, the new are concentrated and always active. The old were unpleasant in appearance and nauseous to the taste, the new are attractive to the eye, and either tasteless or may easily be administered so as to conceal the taste. The old were dangerous because of their unknown potency and massive dose, the new are absolutely safe because of their definite effects and the ease with which their action can be controlled when administered by the intensive method of dosage.

The form and concentration of the active principles enables the practitioner in the cities and larger towns to have with him at all times the more important remedies, and to be able to administer them at a moment's warning when needed in case of an emergency.

Their importance to the physician practicing in the country, or who is distant from his base of supplies, is well expressed by Dr. Robert Gray, who is himself one of the most remarkable figures in the medical history of our day, and who has practiced medicine for most of the time since the close of our Civil War in one of the southern provinces of Mexico. He writes as follows:

"I carry 156 active principles, weighing in all less than five pounds with ease, the equivalent of which in

galenic forms would load two mules. I am never ambushed by the enemy, when suddenly confronted by some desperate emergency, no matter what the disease or the emergency may be. I have the antidote while time for medication yet remains, and do not have to send prescriptions to a distant drug store for uncertain remedies, a makeshift often fatal to an imperiled life."

CHAPTER VI

The Treatment of Typhoid Fever

AS A FURTHER illustration of the application of active-principle therapeutics, I shall speak to you today of the rational treatment of typhoid fever. But I do not wish you to understand that there is any recognized method of treating this or any other disease which is limited to the exclusive use of the active principles of plant-remedies. Rather, I desire to call your attention once more to the fact that the use of the active principles in the treatment of disease does not, in itself, make a physician an active-principle therapist; but neither does the use of other remedies in addition prevent his being such.

Indeed, as I have already told you more than once in substance, the active-principle therapist as a rule is not a secterian, or a faddist, or an extremist in any direction. He uses the active principles and conforms to the other fundamentals of the method in most cases, for the reason that he has become convinced that the best results can be secured in this manner. But, in any case where experience or observation or testimony has convinced him that the cure of the patient can best be brought about in some other manner, he unhesitatingly departs from the tenets of strict active-principle medication and uses that which to him seems the best method. Not methods, but results are the things to be sought after.

You will find that typhoid fever does not always present itself in the sick-room as it is pictured in the lecture-room or in the text-book. I once heard a physician say that, although he had been in practice for ten years, he never had seen but one typical case of any disease. By which he meant that he had seen but one case which

corresponded closely with the descriptions given in the books. He had learned the lesson that, while the teacher must describe the type, just as the artist must make his sketch a composite picture, in actual life no one case corresponds exactly with the type, no one individual perfectly resembles the composite picture.

The Importance of Accurate Diagnosis

It is not within my province to dwell upon the diagnosis of typhoid fever; your professor of practical medicine no doubt has instructed you carefully in this respect. Very likely he has told you that, while sometimes the diagnosis is easy and can be made early in the disease, it is difficult in others, and much valuable time may elapse before one is quite sure as to the real nature of the disease.

This was true to a much greater degree when I began the practice of medicine than it is today, and, hence, the need of such instruction may no longer be felt. For, by the aid of the methods of modern laboratory diagnosis, the number of uncertain cases is reduced to a minimum. Especially is this true if it is your fortune to practice in or near a large city, where you can avail yourselves of the advantages now uniformly found in large hospitals, you will be able to rely to a great extent upon these methods to aid you in diagnosis; and your results will, without doubt, be far more accurate and satisfactory because of these aids.

And, indeed, you will need to avail yourselves of the latest and best methods which science has placed at your command, in order that you may do your whole duty, meet successfully the sharp competition to which you will be subjected, and bring the largest possible proportion of your patients safely back to health.

But, if, on the other hand, it should fall to your lot

to find your work in a sparsely settled country, where you are out of easy reach of the helps of which I have spoken, do not be downcast or discouraged because of these things. There are no advantages without corresponding disadvantages. Always when one end of the seesaw board goes down the other end goes up.

In the country, you will be farther away from help, and, thus, will be obliged to depend upon your own resources. But, in compensation, you will develop self-reliance, independence of action, and an all-around versatility that does not characterize the specialist or the laboratory physician.

Therefore, I say, develop yourself according to your opportunities, and you will be able to meet the responsibilities of life as they come to you. And this means that you should gain a thorough understanding of the most improved methods of diagnosis as well as of therapeutics, and that in the treatment of disease you should bring to your aid every means within your reach.

The Old and the New Idea Contrasted

Typhoid fever is a specific disease, and its cause is a specific germ, the typhoid bacillus. The symptoms really are due to the presence of the bacilli in the blood—what might be termed a bacillemia. This condition is found at a very early stage and is continued throughout the disease. The intestinal lesions are centralized in the Peyer glands, but also are found in various parts of the intestinal tract. The glands in question are the site of entrance of the germs, just as the glands of the throat are the site of entrance of the bacilli of diphtheria; in either case the principal lesions existing at the point of entrance.

The fever is the most constant, as it is the most important, of the constitutional symptoms, and is present

in virtually all cases, making its appearance at an early stage, often as the first symptom attracting the attention of the patient. Usually, however, the intestinal symptoms are early manifested, and these and the acidemia precede, and they also cause, the fever in every instance.

For the reasons named, remedies directed to the fever itself can not be relied upon to check it as long as the specific germs retain their activity. And, as the removal of the morbid cause is always more important than the treatment of the resulting symptoms, it is even more material that we should strike at the germ than to combat the fever.

A friend of mine, who was graduated from Harvard the year after I was from the University of Vermont, took for the subject of his graduating thesis "Typhoid Fever;" and in discussing the treatment he wrote as follows—this sentiment, he tells us, embodying the substance of the teachings he had received on this point: "The treatment of typhoid fever is devoted to one end, namely, to keep up the patient's strength till the disease has run its course. There is no drug which will lessen, cure or cut short the disease."

This statement has a most familiar sound and calls to mind the similar words of Osler with respect to pneumonia; raising, indeed, the question as to whether Osler took his ideas from Harvard or Harvard and Osler both drank from the same fount of knowledge. Undoubtedly the statement quoted represents the consensus of medical opinion of a generation ago. As for my friend, I am glad to be able to tell you that he has entirely repudiated those ideas and now advocates and practices something quite opposite to those pessimistic notions.

Expectant Versus Prompt Treatment

Perhaps the worst result of these teachings was the state of mind they engendered, leading, as they did, the

practitioner of that day to make no endeavor to do anything for a fever, except to watch and wait until the disease was fully developed; and then the symptoms were treated, and the symptoms only, since according to the prevailing theory nothing could be done for the disease itself, either to cut it short, to cure it or even to lessen its intensity.

But, glory be! No such hopeless dogma hampers the action of the active-principle physician. The main desire of such a practitioner is, to get at the disease early—and the earlier the better. He does not even wait until the diagnosis is final and complete before beginning the treatment, but treats the symptoms as he finds them. It is true that he still has difficulty in getting his cases as early as could be desired, but, thanks to his persistent teachings in this respect, he certainly does get called to his patient much earlier than did the fathers.

Right here I want to impress upon your minds this one point, namely, that the most important point, the one thing which more than any other characterizes the active-principle treatment of typhoid fever and of all other acute disease, is *the early beginning of treatment*. This is in strict accord with the principles laid down by Burggraave, the founder of dosimetry, who declared that “dosimetric medicine rests essentially upon its power to jugulate those fevers in which all acute maladies have their inception.” But only at their start can these maladies be aborted. *Therefore, begin early.*

Now, I do not claim that all cases of typhoid fever can be aborted, or even most of them—in the stage in which they usually reach us. But I do believe in the abortability of fevers and other acute diseases; and that not merely as an ideal to be aimed at, but as a fact which can be actually accomplished in a considerable proportion of cases. And when we cannot succeed in cutting short the disease by early treatment, we can at

least favorably modify the symptoms, prevent dangerous complications, shorten the duration, and lessen the mortality. If I did not believe this much, I should not have the courage to undertake the practice of my profession.

Great Promise in Bacterin Treatment

The vaccine, or bacterin, treatment of typhoid fever is one which promises great results, and although there is not yet a universal agreement as to the degree of its efficiency, from all indications it seems probable that with the further development of the method its value will be increasingly recognized.

As a preventive measure, its importance certainly is well established. Dr. George M. Gould declares that it renders an individual practically immune to typhoid fever for at least two years, is attended by no danger and by practically no inconvenience, and that exhaustive experimentation has proven it reliable. This is generally accepted as true, and it follows that antityphoid vaccine should be used in all epidemics, and also by all persons who are likely to be exposed to infection, such as are travelers in countries where pure water can not be obtained, as also soldiers and sailors in general. Indeed, it is largely through the experience of these latter classes that its value has been established. As a means of treating the disease once it is established, the place of the vaccine is not so firmly fixed, but seems, with each year, to be increasingly recognized. It does not interfere with other medical treatment, and when properly used it seldom does harm.

For these reasons it seems to me advisable, when the diagnosis of typhoid fever has been made, to administer the proper dose of typho-bacterin, and repeat the same at proper intervals throughout the course of the disease; meanwhile continuing the usual medical treat-

ment. And here again we see the importance of beginning early; for all authorities are agreed that the earlier this measure is employed, the greater is the benefit likely to be derived from it.

The Essentials of the Treatment

The essential treatment which is relied on by the active-principle physician combines three elements: it is eliminative, antiseptic, and defervescent.

1. The treatment is eliminative, in order that the decaying and septic material in the intestinal tract, and throughout the system, may be removed, so far as possible.

2. It is antiseptic, in order that the entire intestinal tract as also the system in general may be rendered a less fertile soil for the growth and development of the specific germs.

Many sneers, without justification, have been thrown at the antiseptic treatment of typhoid fever, on the ground of the evident impossibility of securing absolute asepsis of the intestinal canal. But no friend of intestinal antisepsis, however ardent, has ever claimed that such a thing is possible.

On the other hand, however, no one has ever shown that the digestive tract, if it is cleared out at the beginning of the disease, and kept reasonably clear of the products of decay, and in addition is saturated and kept saturated with a nonpoisonous antiseptic agent, furnishes as good a soil for the growth and development of the typhoid or any other pathogenic germ as when these conditions are reversed. And this is all that the most enthusiastic friend of intestinal antisepsis ever has claimed.

3. It is defervescent, not only because the fever is a source of danger in itself, but because the rise of

temperature is an indication of the severity of the infection; and, if it can be kept at a reasonable point, the danger is greatly lessened.

Remember that each case must be treated on its own merits. The patient himself must be treated as well as the disease, and no two are alike. The symptoms also must guide in the treatment, as showing where the most vulnerable points are to be found, which need the most urgent attention, and to which the greatest care must be given.

There should be no such thing as a routine treatment; still, there needs must be a general plan, but which must be modified as conditions may seem to demand. It is this general plan of treatment which I shall try to lay down, one which is adapted to the average case and can be modified as may be needed. But, like the doctor who had seen only one typical case, you also may never see but one—or not even one—case to which the treatment I shall describe may seem the best adapted.

A General Plan of Treatment Outlined

The first thing needed is thorough elimination—cleaning out. If the patient is seen early, begin with a tablet containing 1-6 grain of calomel, 1-6 grain of podophyllin and 1-12 grain of bilein. Give this every half hour for six doses. Two hours after the last dose has been taken give a full dose of a laxative saline. If needed repeat this every two hours until the bowels have been thoroughly cleaned out, ending with loose watery discharges. If there has been a preliminary diarrhea, it will take less to produce this result than when there has been constipation. But the clearing out is needed under either circumstance. As for the dose, the effect is what is needed. If much is required, give much; if little, give little.

When this result has been thoroughly secured, it is time for the next step, which is, to secure intestinal asepsis to the greatest extent possible. Here the agents to be employed, and which experience has shown to be the most effective, the safest, and the most reliable, are the sulphocarbulates of zinc, calcium, and sodium. These salts may be given either singly or, as more often desirable, the three combined. This remedy should be given in doses of from 10 to 30 grains every two to four hours, according to the severity of the attack. It is best given in solution, with a plenty of water. Or the tablet may be crushed or even given whole in some cases, but always with plenty of water to insure ready dissolution in the stomach.

Shaller says in regard to this procedure: "Where the evacuations are frequent and foul, 5- to 10-grain doses of any of the three sulphocarbulates or of the combined intestinal antiseptics not only checks the offensiveness of the stools, but lessens their number. As the presence of the sulphocarbulates in the intestine checks and prevents fermentative action, the high temperature of typhoid fever begins to decline and can be kept down by the administration of these remedies throughout the disease. . . . Treated on the above plan, typhoid fever will be of shorter duration than usual. Instead of running three weeks or more, patients are frequently up and about within two weeks. If this treatment is begun very early, the probabilities are that very few cases can run their full three weeks' course. Calomel and the sulphocarbulates do certainly abort many cases of typhoid fever."

Abbott writes: "Not all cases pursue an eminently satisfactory course under the antiseptic method; but the severe forms become scarce, the abortive cases frequent, and the disease puts on a milder aspect. The sooner the antiseptic method is put in practice, the more decidedly

will its good effects be manifested. If the case is not treated until ulceration has occurred or until the patient's condition is desperate, and the believer in anti-septics is then called on to demonstrate his miracles, failure is probable. The sulphocarbolates will usually prevent the dangerous conditions of the third week, but there are better remedies to promote the healing of ulcers, prevent perforation, and stop hemorrhage; also to combat pneumonia. But when they are given early in the attack, in the manner described, there is little to be apprehended in the way of complications and sequels."

Here again (pardon me for harping so persistently on one string) let me call attention to the stress which is placed upon beginning treatment early. When this is done, the dreaded complications seldom occur, while the doctor will be credited with having had to deal with only a light case of typhoid fever, or perhaps no typhoid infection at all. However, your patient gets the benefit, after all.

The laxative treatment should be repeated in full every few days, and a sufficient dose of saline laxative should be given every morning to secure one or two loose movements each day.

Steps in Combating the Febrile Condition

The next thing to be considered is the treatment of the fever. It should not be inferred, of course, that the institution of this treatment is to be delayed until the eliminatives and antiseptics have accomplished their work; rather, it sometimes is the first form of treatment to be undertaken, and, moreover, always to be begun early. Thus, the different forms of treatment are to be carried on together or the one or the other may have the precedence, according to the symptoms in each particular case.

The principal drugs to be relied upon for this purpose are: aconitine, veratrine, digitalin, and strychnine. It is sometimes objected that the first two of these drugs are sedatives and depressants, while the last two are tonics and stimulants—the two classes seeming to be antagonistic in their effects.

However, you will remember that in a previous lecture I explained the selective action of the cells throughout the system, whereby each cell selects from the general blood stream those things which are needed for its building up, and rejects those which are foreign to its needs; that, while this is true when only enough material for proper nourishment is absorbed, it nevertheless is possible to overwhelm or poison the blood-cells by an overdose, which forces them to take up more than the proper amount; that this rule holds with regard to medicines as well as to foods; and that in this way it is possible to use to the greatest advantage remedies of unlike and even to some extent opposing properties, provided only minimum doses are employed.

Fever and the Vasomotors

Along with this, you will remember the theory of the relation of fever to the vasomotor nervous system, as explained by Doctor Waugh, which was explained in the same lecture as the foregoing. He tells us that “acute inflammatory attacks begin with a disturbance of the circulatory equilibrium. The affected part fills up with blood, which distends the capillaries, whose walls, relaxing under the increased pressure, afford an example of relative vasomotor paresis, being abnormally weak in proportion to the pressure to which they are subjected. But, as there is no reason to suppose that the actual quantity of blood in the body has been increased, this overplus of blood in the distended capillary area indi-

cates that there is too little blood in some other part of the vascular system. In other words, the vasomotor paresis in the hyperemic area is exactly compensated by a vasomotor spasm in some other vascular area."

Now, the normal equilibrium of the circulation in these cases may be restored in either or both of two ways: by increasing the tonicity of the dilated vessels or by causing those which are contracted and comparatively empty to relax and dilate, or by both acting together. But, this is just what we undertake to do in the treatment of fever by the methods that are adopted by the active-principle medicationists. Contraction in the dilated areas is secured by means of the vasomotor tensors, strychnine and digitalin; and relaxation in the contracted areas is obtained by the vasomotor relaxants, aconitine and digitalin. By either of these means, but best by both carried on together, the restoration of circulatory equilibrium is secured—and this is the great object to be attained.

The basic prescription for fever, therefore, would consist of aconitine and digitalin. Aconitine inhibits the rapid action of the heart, slows and regulates the pulse, lessens the vascular tension, and lowers the temperature. Digitalin also inhibits the action of the heart, which it slows and strengthens, meanwhile restoring vascular tension where it is wanting. To these two agents, Burggraeve added strychnine, which is the most powerful vital incitant we possess, energizing every organ and function of the body, and especially combating that tendency to weakness and debility which is common to all febrile diseases and increases with each day of their continuance. This happy combination of drugs is known as the dosimetric trinity, and is especially adapted to the asthenic form and stages of fever.

To the basic prescription of aconitine and digitalin, Abbott added veratrine, constituting what is known as

the defervescent compound. This addition of veratrine increases the inhibitory power of the combination, slows the pulse, and opens every door of elimination, so that it is one of the most effective agents for the removal from the body of the various toxic products, whether of infectious agents, morbid metabolism or from absorption from the alimentary canal.

When Aconitine, When Veratrine?

As an agent in the treatment of fever, aconitine is the preferred remedy in children, in ephemeral fevers, and in the earliest stages of fevers in asthenic forms. Veratrine is the remedy of choice when the case is sthenic in its nature and the pulse full and bounding. But when the patient is debilitated, markedly asthenic or the disease is one which in its ordinary course leads to great weakness and debility, especially heart weakness, then the trinity granule of aconitine, digitalin, and strychnine is to be used from first to last. But in a disease like pneumonia, when it is desired to secure quick results and the patient is plethoric and full-blooded, then the defervescent granule is the thing.

Furthermore, in the different stages of the disease, we often change from the one to the other combination as the symptoms may change. Moreover, when it is especially important to reduce the fever quickly in a patient who has a good heart and is not debilitated, this result may be obtained by the use of the coal-tar products acetanilid or acetphenetidin more quickly, although with greater danger and less permanently, than with the defervescent alkaloids.

Remember that the doses of the tonic alkaloids, strychnine and digitalin, are not such as to stimulate powerfully, not such as to serve as a whip to the tired horse, but rather such as to afford proper support and prevent

exhaustion of the vital forces. Much can be done by the proper use of these remedies to prevent the more dangerous complications and sequels which under other circumstances often make their appearance and sap the vitality of the patient.

The trinity granule may be given with safety every hour as long as may be needed. The aim should be to keep the temperature below 102 degrees or as little above that figure as possible. And when the fever is gone, and the aconitine, therefore, no longer is needed, while support for the heart and nervous system is still indicated, then drop the single granule, and substitute in its place the granules of strychnine and digitalin, every hour or two hours for as long as may be needed.

I believe that this treatment, thus briefly outlined, is superior to any other with which I am acquainted for the essential fever process under whatever circumstances occurring. Of course, other agents may be added as indicated, and other methods may, in rare instances, be preferred. It is, however, a method simple, easy of application, and satisfactory in result to a greater degree than any other I have ever made use of.

We now have considered the medicinal treatment of typhoid fever under the four heads of bacterial vaccines, eliminative treatment, antiseptic treatment, and antiphlogistic, or febrifuge, treatment. It remains to consider the general care of the patient.

General Management of the Typhoid Patient

From the onset of the illness, the patient should be confined to the bed, which when possible should be in a large, well-aired and pleasant room. No room in the house is too good for the sick-room. "Walking cases" of typhoid fever, so called, are proverbially dangerous; the danger arising largely from the exposure and undue

exertion necessarily involved as well as from the lack of proper care in other respects. Strict cleanliness should be observed in all things. Disinfection of the room itself, the bed, bedding, and all the clothing, as well as of the discharges, should be scrupulously carried out. Many agents are used for this purpose, but perhaps no single one better meets the requirements in most instances than chloride of lime.

It is the practice of most physicians to restrict the patient to a liquid diet during the continuance of the fever. This may include milk, rice- and barley-water, fruit-juices, bovine, beef-juice, white of egg, malted milk, and so on.

Baths should be administered both for cleanliness and for the comfort of the patient. They may be hot, cold or tepid, according to the judgment of the physician or the desire of the patient. The use of cold baths to control the fever is highly recommended by good authorities, but as a matter of fact, they are better adapted to institutional work than to private practice, and have never been as much used in this country as in Germany.

Aiding the Defense

Nuclein may be used with advantage to strengthen the defensive forces of the system, and echinacea to aid in bringing about systemic asepsis. In the severer forms, and especially where treatment is begun late, baptisoid sometimes is a valuable remedy. The special indication for this drug is a brown or purplish discoloration of the tongue and mucous membrane of the mouth, with a congested face and deep-red tongue. Quinine arsenate sometimes is desirable for its tonic effect. Caffeine acts as a valuable diuretic and brain and nerve stimulant. Codeine may be needed to quiet irritated nerves and

induce sleep. In exceptional instances, morphine, hypodermically, may be required for the relief of severe pain. In the active-principle treatment of typhoid fever there is no place for alcohol.

When ulceration has occurred and serious symptoms are present—usually about the third week—threatening perforation, oil of turpentine is the standard remedy. When this is given in 5-drop doses every two to four hours, in capsule or in an egg emulsion, it is a usual thing to see the tympanites quickly subside, the tongue become moist, and the stools assume a healthier character.

For hemorrhage, the best remedies are: ice to the abdomen, silver nitrate in small doses up to 1 grain in a day, and atropine hypodermically, in 1-100- to 1-50-grain doses and repeated so as to keep the blood at the surface. Emetine hydrochloride, in 1-2- to 2-3-grain doses, hypodermically, has recently been advised for the treatment of hemorrhage and deserves a careful trial.

Perforation of the intestine is perhaps the most dangerous of all the complications and calls for the prompt opening of the abdomen and resection of the diseased portion of the intestine. But when the case is treated antiseptically from the start, perforation seldom will occur. The same is true of the various other serious complications.

I feel that I ought to ask your forbearance for so constantly iterating and reiterating, with what must seem persistent and needless frequency, the laws of active-principle therapeutics—to which, you may think I have been paying more attention in this talk than I have to the treatment of typhoid fever. The reason is, that I am not teaching you the practice of medicine, for I know that you will get better instruction from your regular professors than I could give you if I were to attempt it. What I am endeavoring to do is, to im-

press upon your minds, in a way to last for the rest of your lives, the more striking features of a method of therapeutics which is comparatively new to most of you and concerning which you look to me to tell you more than you will be likely to get from anyone else in your present studies.

You will note that I have not attempted to discuss the use of bacterins in the treatment of typhoid fever; this is not because I lack faith in these agencies, nor is it because the active-principle men do not employ them—for the exact contrary is true. In this little book I have limited myself in the main to medicinal therapy, and this is my theme. The truth is, that Doctor Abbott and his associates are warm advocates of the prophylactic bacterin, and believe that even in the treatment of developed cases of typhoid fever the typhoid bacterin has distinct though limited value.

May I add that another alkaloid, emetine, has recently been used by Frazier and others for the treatment of typhoid fever with alleged good results? It is too early to say, as yet, just how great its value is or what its limitations are.



CHAPTER VII

The Treatment of Acute Infections

DR. W. H. BURGESS, of Tennessee—the man who invented one thousand new uses for epsom salt—reduced all known diseases to five, which he named Retention, Invasion, Enervation, Trauma, and Poison. If you will look upon these as five original types with which all diseases may be compared, or as five great classes in one or another of which all known maladies may be placed, you will see that Burgess was a man who thought for himself, even though his ideas do not run in the beaten tracks.

The acute infections, to which I shall call your attention today, all belong to Burgess' second class. They are invasions. To use the Doctor's own words, "there is an enemy present, and this whole array of symptoms is an invasion."

Under the general head of acute infections, it is customary to consider all of the eruptive fevers—such as measles, scarlet-fever, small-pox, chicken-pox—with diphtheria, influenza, whooping-cough, mumps, and others of a similar nature, most of which commonly are regarded as diseases of children, for the reason that, being of a highly contagious nature, most persons contract them before arriving at the years of adult life. To these may be added a formidable list of other diseases, including pneumonia, typhoid fever, erysipelas, and meningitis, all of which are acute infections. But to make up the class in this way would be to include in it an unduly large proportion of all the diseases the physician is called upon to treat, consequently I shall limit the term acute infections to the diseases first named.

A General Consideration

Let us first consider them as a class and see wherein they resemble the type, which is a composite of the whole.

In the first place, they are all acute diseases and, beginning with a greater or less degree of fever, require special treatment for the hyperthermia; except in those light cases in which only care, watching, and proper restraint are needed for restoration to health. Reduction of temperature is best accomplished by means of the defervescent alkaloids aconitine and veratrine, aided when necessary by the tonic remedies strychnine and digitalin, according to the general method already described by me in dealing with pneumonia and typhoid fever. To the remedies named, some others may be added under special conditions. Each remedy has its special indication, and the remedies and combinations selected are varied with all the changing conditions of the patient and phases of the disease. With this understanding, it is safe to say that the treatment for "fever," once learned, is learned, in its general outlines, for all classes of patients and every named disease.

In the second place, since these diseases are all invasions of the body by an enemy from without, they are all benefited by some form of eliminative treatment, whereby the enemy may be driven from the system—or, if not driven out, at least rendered unable to thrive and grow, because the resisting power of the body has been raised and the natural immunity of the system to disease, which is reduced by fecal toxins and retained waste, has been increased. Hence, elimination is an essential step in the treatment.

Here again, the general principles to be followed are substantially the same as those which were laid down under the head of eliminative treatment in typhoid fever. There is, however, a variety of other drugs and

remedial measures that may be called in aid, among them, calomel, podophyllin, bilein—small doses, singly or combined—followed by the saline laxative; or, in some cases, the old-fashioned remedy castor-oil may be superior to any of the others. Of course, other appropriate remedies may be called for, while sometimes a laxative enema is advisable. There is plenty of opportunity for intelligent choice. But, whatever is given, give it in *small doses to effect*. The doctrine of clean out, clean up, and keep clean is strictly applicable in all invasions—that is, acute infections.

All Are “Septic” Diseases

In the third place, they are all septic diseases, due to some poison introduced into the body from without. These poisons are believed to be living germs, each one specific to the disease which it produces. In nearly all of these diseases, this germ has been discovered and its habits studied. In others, this has not yet been done, but in all probability soon will be. And, since it is impossible to eliminate the poison completely, an antiseptic is also needed, whereby the sepsis may be overcome and the germ destroyed; or, when this is not practicable, at least its vitality may be sapped and the soil in which it exists rendered infertile, so that its growth may be hindered or prevented. These results may usually be accomplished by means of chemical antiseptics, employed both internally and externally.

When taken into the system, these germicides in many cases show an affinity for some particular organ or tissue. Thus, calcium sulphide exerts its characteristic effects upon the blood; the sulphocarbolates, upon the intestinal canal; creosote, upon the respiratory organs; hexamethylenamine, upon the urinary organs; and so on through the list. Salvarsan acts specifically in syphilis;

quinine, in malaria; emetine, in dysentery. The particular remedy to be employed will, therefore, be determined by the nature of the disease and the organs and tissues which are chiefly affected thereby. This form of therapeutics sometimes is referred to as chemotherapy.

In the fourth place, since they are all specific diseases and produced by definite living germs, each one propagating only its own kind, it follows as at least a probability that each one may be successfully treated with some form of serum, vaccine or bacterin administration. As a matter of fact, this form of treatment has been developed and is being employed with success in some of the acute infections; in others it is being developed and is now on trial; while in still others the specific germ has not yet been isolated and no progress has been made at the therapeutic end of the problem, though even here it seems likely that the near future will see great progress in this direction. Thus, vaccination was first employed in smallpox, antitoxin has won its greatest laurels in diphtheria, bacterins are used with considerable success in typhoid fever, while in measles, up to the latest of my information, the microorganism had not yet been discovered.

Four Different Methods of Treatment

We find, then, four different methods of treatment that are common to most or all of the acute infections; these being: the defervescent treatment, the eliminative treatment, the antiseptic treatment, and the biologic treatment. And it seems to me that you can get a more practical knowledge of this subject, that you will be better prepared to treat these cases when you meet them in your practice, if you will familiarize yourselves with the general nature and specific applications of each

of these different methods as well as the class of cases to which they are adapted, once for all, rather than to take up the individual diseases separately and learn a separate treatment for each one.

By this I do not mean to teach you that any two of these diseases are to be treated in the same way, or even that any two cases of the same disease are to be so treated; but only that there are certain general principles and conditions which are the same in each, and these may be learned once for all.

You will be struck by the fact that these four forms of treatment are in general the same as those which I presented to you the other day in speaking of the treatment of typhoid fever. This arises from the fact, to which I have already alluded, that typhoid fever, strictly speaking, is a member of this class, an invasion, an acute infection. As a matter of convenience and because of its great importance, it has been considered by itself. But the general principles are the same as in the other members of the class.

In addition to the four forms of treatment already referred to, it is necessary to make mention of at least one other, namely, symptomatic treatment. In this, as a sort of miscellaneous class, we may place all the measures and remedies not already enumerated that are required in the treatment of special symptoms, and which may or may not occur in any of the cases mentioned; which, though, when so occurring, are in the main not essential, but only incidental to the disease considered.

Symptomatic Treatment

An illustration of this is found in the use of morphine, which may be called for in almost any disease, at times, for the relief of severe pain; but it is really no part of the treatment of the disease, being employed only for the relief of a symptom. Under this head, we use also

heart and nerve stimulants and sedatives; remedies to aid digestion and improve nutrition; remedies that relieve local anemias and congestions, either by local or general action; and remedies that attack local foci of disease.

We will now proceed to take up a few of the diseases individually, but only very briefly. My aim is not to exhaust the treatment, but only to suggest a few remedies for special diseases, and leave the rest to be treated according to the general principles which we have already considered.

The Treatment of Measles

Rubeola, or measles, is perhaps the most common and one of the most contagious of the eruptive fevers, few children escaping it. The symptoms and diagnosis are important, but it is not for me to dwell upon these. The first essential of treatment is, to begin early. The second is, to have full control of your patient and the family. Given these two things, and the responsibility is yours. Failing of these, the responsibility is divided, as is equally the probability of recovery.

Treat the fever on general principles. Keep the bowels open and the intestinal canal reasonably aseptic. Saturate the patient with calcium sulphide. I shall give this last advice so often, it may be well to tell you just how to proceed.

In the first place, you must remember that calcium sulphide is a somewhat unstable drug and that many of the preparations on the market are utterly without value, because of the fact that they have lost their strength. No preparation which does not reveal itself by the smell of sulphureted hydrogen soon after it has been ingested, is of any medicinal value whatever. So, when you are taking either the granules, pills or tablets

of this substance, if you do not smell "rotten eggs" shortly afterward, your drug is of little value. As a matter of fact, judging from what information I can obtain, much of the calcium sulphide sold is of little value. This fact accounts for the widely differing opinions of different physicians concerning the value of this drug, some being enthusiasts in its favor, others declaring that they have never found it of the slightest value.

The very first thing, then, is, to be sure you have a good drug. Some coated tablets keep their strength fairly well, but the granule seems to preserve its virtues better than other pharmaceutic forms.

My own experience has been mostly with 1-grain tablets and 1-6-grain granules of proven reliability. Of these, the granules undoubtedly are to be preferred, and a 1-6-grain granule taken every hour will do more than a 1-grain tablet every four hours. Nevertheless, since many adult patients, especially if not seriously ill, will not take a small granule every hour, when they will take a large tablet every four hours, we sometimes must give the tablet or else order several granules at a single dose. But, whichever preparation is employed, be sure that it is active—that is to say, that it "smells the real thing."

Whether or not the use of this remedy previous to exposure will render one immune to the disease, I am not prepared to say with any degree of certainty. I do believe, however, that such a saturation established either previous to exposure or during the stage of incubation would either prevent, abort or largely modify the symptoms of the disease; and I should use it with confidence for this purpose.

In addition to this use as an antiseptic, the sulphide of calcium is also the best remedy for the cough of measles, which is hard, harsh, and hoarse. Indeed, for this kind of cough, no matter in what disease it occurs,

there is no better remedy than calcium sulphide. Here the granules may be given every one or two hours or the tablets every two to four hours.

At the same time you are prosecuting the germicidal treatment look out for elimination, by giving 1-10-grain calomel every half hour for ten doses, following this in an hour with the proper dose of saline laxative. If there is obstinate constipation or intestinal autointoxication, add to the calomel an equal quantity of podophyllin or else use the compound granule containing 1-6-grain each of calomel and podophyllin, giving six doses only. Repeat the saline laxative, if necessary, in an hour or two, until free movements result. Or it may be advisable to give an enema.

Meantime the child should be bathed in a carbolized solution of epsom salt, made by dissolving an ounce of the salt in a quart of hot water and adding 10 minims of carbolic acid. This is an excellent lotion to use for sponging the patient in all cases of the eruptive fevers, these bathings to be repeated once or twice daily throughout the course of the sickness.

Aconitine may be prescribed for the fever, in the usual doses. That is to say, to 24 teaspoonfuls of hot water in a cup, add 1 granule for each year of the child's age and one additional granule. This is the general rule for active-principle dosage in the case of children, and is known as Shaller's rule. The frequency of the dosage is regulated by the height of the fever, the aim being to keep the temperature below 102 degrees. But, when elimination and antisepsis have been carefully attended to, in a large proportion of the cases the fever will be but slight and little, if any, treatment for it will be needed.

In the case of children, some practitioners prefer to substitute gelseminine for aconitine when there is present the special indication for the former remedy, namely,

a flushed face, bright eyes, contracted pupils, and increased heat of the head. When this is prescribed, the same rules as to dosage prevail.

Except in severe and long-continued cases, it is seldom necessary, when dealing with children in these diseases, to resort to the combination known as the trinity and the defervescent granules.

When the eruption does not come out promptly, a hot bath, hot drinks, sponging with water containing mustard, or hot-packs on the chest will usually aid materially in producing the desired result. This is important, as there is always danger in the delayed eruption.

The mouth, nostrils, and throat should be cleansed carefully with some alkaline antiseptic solution and the ears syringed with warm boric-acid solution once or twice a day.

The bronchial symptoms may be largely controlled by means of inhalations, once in four hours, of a medicated vapor made by adding 20 drops each of oil of eucalyptus and oil of turpentine to a quart of boiling water.

The diet should be light, consisting mainly of broths, gruels, fruit-juices, and the like.

Special symptoms must be met as they arise.

The Treatment of Scarlet Fever

Here again the standard antiseptic is calcium sulphide, and this should be given, not only to the patient, but to all exposed persons who have not had the disease. My own experience has convinced me of its great value. I will mention but one instance.

A woman of thirty-five was taken down with scarlet-fever, which ran a fairly typical and moderately severe course. During her illness, the house was strictly quar-

antined, and in it, besides herself, were confined her husband, her own little daughter of seven or eight years, and her husband's sister—none of whom ever had had the disease.

From the very onset of the disease, I saturated all four persons with calcium sulphide, in the manner described under the head of measles. The smell of the sulphureted hydrogen gas was obvious in the breath of each one—and this is essential to securing the desired results. This treatment was continued until the patient recovered and the quarantine was removed. Neither of the exposed persons contracted the disease. This perhaps was not strange in the case of the adults, but that the child should escape certainly is suggestive. The three well persons in the house went freely in and out of the room where the sick woman was confined, no restraint being put upon them.

I am aware that this one case proves little or nothing. Still, as one of a considerable number of similar cases occurring in my own practice and in that of my friends, it serves to confirm me in placing much reliance upon this drug as a preventive of scarlet-fever and to think that perhaps it acts the same in the other contagious fevers—though my experience with the latter has been less extensive in this respect.

Another method of prophylaxis worthy of trial and likely to prove of value, although it has not as yet won general adoption, is the use of the scarlatina prophylactic bacterin. Further experience with this is desirable.

The treatment of the disease, when developed, is similar in some respects to that of measles. However, here the temperature is higher and the general symptoms are more severe, while the local symptoms call for close attention.

Carbolated epsom bath and general antiseptic treat-

ment are of value here as in measles. The mouth and throat should be sprayed or gargled freely with a solution of Seiler's tablets, camphomenthol, borothyme, or some similar preparation, in proper dilution. Anointing the entire body with cacao-butter or camphorated oil does much to relieve the extreme itching; also to lessen the contagiousness, if, as is generally taught, the contagious element is found in the scales which flake off the body. Intestinal antisepsis may be observed, with good results, from first to last. When desquamation is complete, the patient should take a hot bath in some antiseptic solution, then put on sterile clothing; while the rooms must be disinfected with formalin gas.

The Treatment of Diphtheria

Diphtheria is due to the Klebs-Loeffler bacillus, and this malady, previous to the discovery of antitoxin, was the most dreaded of all the acute infections. But now it has been largely shorn of its terrors, thanks to the antitoxin, and is now less to be feared than scarlatina or measles.

You whose memory does not reach back beyond the days of antitoxin cannot realize the wonderful change which this remedy has brought about in the prognosis of this disease. For myself, I well remember my first experience with it, and the radical transformation it wrought in my own outlook.

It was in the afternoon of December 27, 1895, when an Italian girl seven years of age was seen by a brother practitioner and, being found to have well-marked diphtheritic membrane in the throat, was duly reported to the board of health. As this physician was called away that night, he left the patient in my charge. When I saw the girl the next morning, I found her throat literally filled and packed with diphtheritic membrane and

realized at once that, situated as she was and good care-taking impossible, there was almost no chance for her recovery with the usual treatment.

Antitoxin being a new remedy and much praised, I determined to try it; but, the next day being a holiday, I had great difficulty in getting the antitoxin from Boston. However, I finally succeeded, and at 7 o'clock in the evening I injected 1000 units of the remedy; this being the dosage then prescribed. That was Thursday evening. On Sunday morning the child's throat was entirely free from false membrane and she was sitting up and writing on her slate. On the following Tuesday recovery was nearly complete and I paid my last visit. This result cannot seem as marvelous to you as it did to me at that time; for, you are used to seeing diphtheria treated in this way, and with similar results, while I at that time was not.

The general experience with antitoxin therapy—and which should guide us—is that, if given on the first day of the disease, the mortality is almost *nil*, while for each day wasted the death rate is largely increased. Another score for the early beginning of treatment.

Along with antitoxin, the usual antiseptic precautions should be scrupulously observed, not only as to the patient, but for the furniture, rooms, and all individuals. All exposed persons should be immunized by receiving a minimum dose of antitoxin. Use the concentrated antitoxin (globulin solutions) only.

Internally, calcium sulphide, echinacea, nuclein, and calcidin are valuable remedies; and right here I want to add that while antitoxin is the specific remedy for diphtheria, there are many other useful remedies that should be used to meet special indications, some of which have just been mentioned. Of special importance is attention to the heart, which suffers severely. Watch

it carefully, giving strychnine, digitalin, and other remedies as indicated.

The principal source of infection is the diphtheria "carrier"—the individual who has had diphtheria (perhaps in such a light form that it was not properly diagnosed) and still harbors the Klebs-Loeffler bacillus in his throat. After clinical recovery *be sure* that the throat is free from this germ. If it lingers, clean it up by using sprays containing suspensions of the bacillus bulgaricus. The same local treatment is useful during the course of the disease; but, of course, no antiseptics should be used when these cultures are employed locally.

In diphtheritic croup, intubation or tracheotomy sometimes becomes necessary. My only fatal case of diphtheria treated with antitoxin was one of laryngeal croup. In cases of croup which is not membranous, calcidin proves successful in nearly all cases.

The Treatment of Grip

The grip, or influenza, is a disease of many forms and a great variety of symptoms. The violence of the disease may fall upon almost any of the organs or systems of the body. The most common form is that in which the respiratory organs bear the brunt of the attack. Or, this may fall upon the digestive organs or upon the nervous system. Probably these three are the most common forms.

But when you have learned the grip from one angle—how it looks and how to deal with it—it is likely, in the next case to which you are called, to strike in a new way and at different organs; so that it is really a difficult matter to get on intimate terms with this protean monster. It is not a pleasant matter, either. And when there are so many forms and such varying symptoms it is not strange that the treatment varies greatly with

different men and that there is as yet no general agreement.

Nevertheless, in all its forms, there is one invariable characteristic of influenza, and that is the great depression. If there is a weak spot in the system, the grip is sure to find it out and force an entrance at that spot. I might go a step further and say that, if there is no such weak spot when the grip attacks a man, there is sure to be such a one when it leaves him. Therefore, every form of treatment should aim at supporting the patient; the vital powers must be sustained in every possible way. Beyond this, the treatment is largely symptomatic.

Alcohol, opium, and all narcotics are to be avoided, because of their secondary depressing effects. Also the coal-tar products are looked upon with suspicion by the best therapists. Strychnine and digitalin frequently will be found necessary.

For the fever, I have no better plan to offer than the usual dosimetric method, with which by this time you ought to be getting somewhat familiar. Aconitine in the early stages perhaps, but more likely the trinity granule from the beginning. Always fortify the heart. Do not wait for the symptoms of depression to manifest themselves, but anticipate them and think yourself fortunate if you are able to forestall them.

Heat is a valuable adjunct to the treatment. The hot bath, hot-water-bags, hot drinks, hot capsicum-tea—all these are good.

Rest in bed is essential while the extreme depression lasts; and this is true in all forms of the disease.

Highly nutritious and easily digested food, such as turtle-soup, clam-broth, raw oysters, milk and eggs, fruit-juices, coffee, and the predigested foods, may be given in small quantities every two or three hours and pushed to the limit of the digestive capacity.

In the respiratory form of the attack, it is well to syringe the ears and irrigate the nasal passages with the alkaline antiseptic solutions, and to spray the nose and throat with campho-menthol or a standard antiseptic oil. Cresoline, oil of eucalyptus, and similar substances may be vaporized, to fill the room with antiseptic vapor. For internal use in this form of influenza, iodized calcium is an especially valuable remedy.

Another peculiarity of grip is that it is liable to lead to all sorts of complications. One of the most common and dangerous of these is pneumonia—and the pneumonias of influenza are mixed infections, and always dangerous.

We are still lacking in the knowledge of any specific antiseptic. We cannot yet with confidence attack the bacillus of influenza, either with a chemical product or with a bacterial vaccine. These things will come, we confidently hope and expect; but as yet the treatment is largely symptomatic. Grip is a tricky devil, and the best way to meet him is to be clothed in the armor of good health and be guarded by the best of care; and, if attacked, to give support at every avenue.

To recapitulate briefly:

In an epidemic of grip or when exposed to conditions which favor its approach,

1. Live simply, guarding your health on every hand; especially, look out for colds, be careful of your diet, and spare your nerves.
2. If attacked, eliminate poisons and tissue waste by means of the usual measures in those circumstances; support the system by proper nourishment and tonic medication; treat symptoms as they occur; avoid anodynes and narcotics.
3. Look out for complications.

Much more might be said, both of this and the other diseases of this class, but the hour is up and I must postpone further discussion until the next time.

CHAPTER VIII

The Management of Chronic Maladies

UP TO this time we have considered only the treatment of acute diseases. In these conditions the needs of the patient are urgent. The treatment must begin early, and be pushed to effect. In the words of Burggraave: "To acute maladies we must oppose a sharp and active treatment; that is to say, the treatment must proceed as rapidly as the disease."

It must be remembered that in these cases the result to be sought for is speedy recovery, the thing most to be feared being death. This afternoon, however, we are to consider the general principles that should be followed in the management of chronic maladies, where the progress of the disease is slower, and where improvement and comparative comfort of the patient often is the best that reasonably may be anticipated, and where death is not always the worst thing to be feared.

Some chronic diseases are curable under proper management, while others are incurable under any management or any form of treatment. You may ask me, "If a disease is acknowledged to be incurable, why treat it?" The point is well taken; the answer, however, is plain.

Suppose you yourself have a well-marked valvular disease of the heart. You may be quite sure that your affection never will be cured, never can be cured; still, is that any reason why you should be abandoned by your physician and left to suffer the worst that nature can bring upon you? Certainly not! For, with proper care and such treatment as may be indicated, you can in all probability go on for twenty years or longer in comfort and good health, scarcely knowing that you have leaky valves, save as it is revealed to you by the

stethoscope of the medical examiner; while without appropriate treatment life would soon become a burden and death a welcome relief.

It is told of a noted divine that he once gave a very remarkable prescription for the attainment of long life. Listen, and take note of it, for there surely is something in it. This is how to attain long life: "Have an incurable disease—and take care of it."

I do not, indeed, advise that you should follow literally this suggestion, especially the first part of it; and, yet, I think that if you will read between the lines you will see that it is one of the best prescriptions for longevity that ever was given. For you may have noticed that it is the bluff and hearty athlete, the man who seems always well and active, the *bon vivant* who enjoys his food and thinks he can eat anything, because he has a cast-iron stomach—it is this kind of a man who has a way of dropping off suddenly in time of stress or strain or of dying quite unexpectedly at an age not past middle life.

On the other hand, the man who has found his limitations, and who found them early in life; who knows that he has disabilities and weaknesses, and where they are to be found—and who then guards his weak spots with zealous care—this is the man who lives to a respectable old age (though perhaps not to extreme old age) and who does his full share of the best work of the world. The reason is that he has learned to take care of himself. And so it is with many chronic maladies: if early recognized and properly cared for they are fully compatible with length of days, a useful life, and personal enjoyment. These things are worth remembering when we are considering the management of chronic diseases.

Another difference between acute and chronic ailments is that when a person is ill with an acute disease,

if the tide is turned and recovery sets in he expects to be well in a short time, able to stop all medical treatment, forget all thought of taking care of himself, and drop back into his old habits of living. But many times the chronic patient must content himself with something less than this—must make up his mind to keep a close watch over himself all his life, and it may be take more or less medicine as long as he lives—that is, if he wants to live long or be of any use in the world or enjoy himself while he lives.

It must be remembered that there are many abnormal conditions which, while not classed as diseases but merely as “diatheses,” yet, are the cause of great discomfort and much suffering and meanwhile prepare the way for serious and even fatal diseases. For example, there is the condition—alas, all too common—of chronic constipation, which results in autointoxication, arteriosclerosis, rheumatism, neuralgia, and unnumbered other forms of suffering.

Chronic Constipation

Chronic constipation has many causes, all of which may be included under the two heads of inherited tendencies and acquired habits. It can be avoided in most instances by correct habits, provided they are formed in early childhood; and even after it has become in a measure fixed much may be done to relieve and correct it by proper diet, hygiene, and remedial measures of various kinds.

I do not know of any medicine which can be depended on to cure constipation. In fact, very few confirmed victims are ever really cured at all, although they may be greatly relieved. However, the combination that has given me more help than any other, and which comes nearer to being a cure for chronic constipation than any

other combination of drugs of which I have any knowledge, is the little anticonstipation granule devised by Doctor Waugh. In this granule a number of drugs are combined with great skill for the purpose, and the finished product possesses the unusual property of producing the desired effect in gradually and constantly reduced doses, until at last, when taken in strict accord with the directions which Doctor Waugh has given, the remedy can finally be dropped entirely; and, with proper care, the constipation will not return.

That is to say, this is the way it works in favorable cases. However, in order to secure the result named, it is not enough merely to swallow a certain number of granules at a given time each day. Like the great painter's colors, the granules must be "mixed with brains." Burggraave's directions again apply here: "To chronic maladies, we must oppose a deliberate method of treatment. That is to say, the treatment should proceed slowly, in proportion to the lengthened duration of the disease." Many cases of chronic constipation fail to be cured because of the too rapid withdrawal and too early discontinuance of the remedy.

Acidemia

Then there is the condition known as acidemia, which is closely related to the so-called uric-acid diathesis and the various manifestations of rheumatism. As among its early indications may be mentioned fermentation in the different portions of the alimentary canal, with eructation of gas, sour stomach, heartburn, and an unduly acid urine. This latter is easily discovered by Harrower's method. When this acidity is found greatly to exceed the normal, it may be corrected, either by the administration of alkalis, to neutralize the acid; or by means of eliminatives designed to stimulate the glan-

dular organs to greater activity, whereby the acid deposits may be removed from the system; or by a combination of both of the two methods, in conjunction with such a regulation of the diet and general habits as will prevent or at least lessen the liability to similar deposits in the future.

One of the best remedies for this purpose is Sodoxylin, containing sodium bicarbonate and sulphocarbolate, colchicine, juglandoid, and xanthoxyloid, besides sodium chloride and aromatics. This is put up in the form of a coarse granular powder, is readily soluble in hot water, and is not unpleasant to the taste. The most reliable indication for the use of this combination, and one in which I have never known it to fail of being useful, is a high urinary acidity. The simplest way with which I am acquainted of determining this acidity is by means of Harrower's sodium-hydroxide test. When the urinary acidity, as thus indicated, goes up, from the normal of from 30 to 40 degrees, as indicated by the acidimeter, to 60 or 80 degrees or more, as often happens, then you may safely prescribe this remedy, with the confident assurance that it will bring help and comfort to your patient, besides the reasonable probability of a cure; provided, of course, this remedy is properly used and continued for a sufficient length of time.

The patients to whom I first administered this mixture were selected because they showed a high degree of acidity of the urine, and their perspiration was so acid that it would tarnish chains and rings and gold and silver watches, and the like. One was a case of arthritis deformans of long standing in an elderly woman, and the other, one of alimentary glycosuria in a young man. I prescribed calomel, podophyllin, and the bile salts to be taken at night, with a sufficient dose of a saline laxative in the morning to insure free movements of the bowels. This treatment was attended by great benefit

and improvement in each patient, but both were obliged to continue it almost uninterruptedly for two or three years in order to keep up this improvement. In due time, however, conditions so changed that the improvement became virtually permanent, and it only was necessary for them to resort to the remedies in the occasional relapses occurring from unfavorable circumstances or lack of proper care. Of course, the arthritis deformans of these persons is not cured, nor ever will be; but the patient has been made vastly more comfortable and existence rendered more enjoyable by means of the remedy.

Another remedy of a somewhat similar nature, especially useful in chronic rheumatism, is calcalith, composed of calcium carbonate, lithium carbonate, and colchicine, with aromatics. My personal experience with this combination has not been extensive, but it is considered a most effective remedy for many of the common manifestations of the uric-acid diathesis, such as lithemia, gout, lumbago, certain forms of eczema, and so on, in addition to the common forms of articular rheumatism.

There is nothing secret in these combinations, and the physician may write his own prescriptions, adapting the drug and the dose to each particular case, if he pleases. There are decided advantages in this latter method; the only disadvantage occurring to me being that most physicians cannot write offhand, and many druggists cannot compound prescriptions that will present the desired remedies in a form compact, convenient, and pleasant for use as those which have been prepared in large quantities by skilled pharmacists.

By the rational employment of these and other remedies of the class, much may be done for the abatement of acidemias. The indications are not difficult to determine, nor are the remedies unpleasant to take—an important matter in chronic conditions, where the treat-

ment must be long-continued. When in your practice you are confronted by conditions of this nature, you will find them worth trying; and, if you try them faithfully, making an intelligent application of the general principles which I have suggested and follow the special directions which you will find laid down in the books of active-principle practice, you may rest assured that you will accomplish much good for your patients.

Tuberculosis

Great headway has been made in recent years in the control and prevention of tuberculosis, and the present death rate is less than half as great as it was not longer than fifty years ago.

According to the modern management of tuberculosis, as practiced in sanitariums throughout the country, the three great fundamentals of treatment are: (1) fresh air; (2) rest; (3) forced feeding. Remember—air, rest, food.

However, even these commonplace agents require care and discretion in their employment, and much harm may be done by their injudicious application. Thus, even fresh air may be of the wrong temperature or humidity or in other properties, or it may be managed injuriously, as in the case of drafts when a patient is in a state of perspiration, or being cold air when he is heated. Many persons undoubtedly have taken cold and had their lives shortened by the routine but injudicious use of fresh air, without regard to other conditions.

So even rest should not be absolute, save in extreme conditions, but it needs to be mixed with a proper but variable amount of exercise (plus "brains"). Forced feeding is far from being an unmixed blessing, and I believe it to be in many instances a very unsafe proceeding, if not directly harmful. Not what is taken

into the stomach, but what is digested and assimilated, is the measure of improvement. Each patient needs individual study, in order that the treatment may be adapted to his personal needs.

I am one of those who still hold to the old-fashioned notion that there are various medicinal agents that will aid greatly in the treatment of tuberculosis. Measures for the improvement of digestion frequently are called for, and when rightly used are of great value. Especially are they likely to be needed when forced feeding is the rule. Pepsin, pancreatin, papain, and the various compound digestants many times are called for. Nuclein and lecithin are of value in strengthening the defensive forces of the system and in building up the nervous system. Iodine in its various forms, but oftenest (as a matter of preference) in the form of iodized calcium, benefits in many cases.

A remedy in which I personally have great confidence is creosote. I can say this the more freely and strongly, because this is a remedy which has never been monopolized or even specially advocated by the active-principle medicationists. To my mind, creosote is to the respiratory organs what calcium sulphide is to the blood and tissues generally, the sulphocarbolates to the intestinal tract, hexamethylenamine to the urinary organs, and so forth. It is both an antiseptic and an expectorant. It is of value in pneumonia in all its forms, in bronchitis, both acute and chronic, influenza, and tuberculosis. It loosens and lessens the cough, relieves irritation and promotes resolution and healing.

I have prescribed creosote in various forms, including plain creosote in pill and tablet, as carbonate of creosote (or creosotal), guaiacol, potassium sulphonate of guaiacol (or thiocol), and calcium creosote (or calcreose). Some of these are proprietary or patented preparations, and, hence, are open to boycott by the ethical purists. I

do not like patented preparations, and I do not like trade-names of drugs; but, I can see that each of them has its advantages, and when I have found a remedy which benefits my patients, that fact alone outweighs all questions of ethics with me. And when a remedy has once established its usefulness in certain definite conditions of disease I prefer the original, even though it be a proprietary.

The use of creosote in tuberculosis is as old as the hills and is vouched for by a long line of our best therapeutists, from Reichenbach in 1833 down to the present time. Potter says of it that "in pulmonary tuberculosis, when well borne by the stomach and continued over a long period of time, it has probably proved more efficient than any other remedy."

Sajous states that "creosote is a valuable remedy in the first and second stages of tuberculosis, excepting those cases in which asthenia is to any degree marked." Thompson says: "The creosote treatment of tuberculosis is a curious revival, after more than sixty years, of the use of a drug which fell into disfavor after its original trial. It is, on the whole, the most satisfactory drug for tuberculosis." Bartholow writes: "Internally, also, creosote and carbolic acid, especially the former, have been used with conspicuously good results in the treatment of the several forms of consumption, except phthisis florida." Even Osler, who is very nearly a therapeutic nihilist, agrees that it "is an old remedy, strongly recommended by Addison; and the reports of Jaccoud, Fraentzel, and many others, show that it has a positive value in the disease."

I have had considerable experience in the use of thiocol (which is chemically the potassium sulphonate of guaia-col), principally in the treatment of pneumonia and the other acute diseases of the respiratory organs; and have come to think very highly of it. The special point in

which it excels the cruder preparations is that it is not unpleasant to take and that it will be borne by the stomach in any desired dosage without creating any disturbance. I do not claim that it has any virtues other than those of creosote or its active ingredient, guaiacol; still, I consider it as one of the best, if not the best, of the preparations and derivatives of creosote. The only drawback to the use of thiocol is its high price (owing to the German patent, which must now be nearly expired).

As for calcium creosote, or calcereose, my experience with it has been much shorter and less extended. As to this preparation, however, there undoubtedly is an advantage derived from the calcium with which the creosote is combined. Clinical workers have seemingly demonstrated the theory that calcium starvation is a prime factor in the causation of tuberculosis. Lime-starved dogs fall easy victims to bovine tuberculosis, while the addition of calcium compounds to their diet cuts short the progress of the disease and they gain weight and are restored to health. (See Van Giesen and Lynah, *Medical Record*, Nov. 27, 1908, and July 1, 1909.) It is well known that calcium is essential to the formation of the fibrin element in the blood, and also that the healing of tuberculosis foci is largely a calcification process. In these facts I find the reason why calcium creosote acts so favorably in tuberculosis.

My attention was called to calcium creosote not very long ago by a medical friend who himself is a victim of tuberculosis, having suffered from repeated hemorrhages, but who still continues to do a good general practice in one of our New England cities. This doctor assured me at that time that he did not think he would still be alive were it not for the benefit which he had derived from the use of calcium creosote. So strongly was I impressed by this remark, coming from a man in whose judgment

I had great confidence, that I at once began prescribing it for my own patients; and I have found it of great value.

One other method of treatment for tuberculosis remains to be spoken of, one which has been strongly advocated and as strongly condemned. This is the vaccine, or bacterin, treatment; that is, the use of the various preparations and cultures of the bacillus tuberculosis. The pendulum has swung high and swung low in relation to this much debated subject, from the days of Koch and his tuberculin, down to those of Friedman and his turtle-serum; and the question is still unsettled, with much difference of opinion yet existing. On the whole, however, it may be said that the advocates of the biologic therapy are steadily increasing; and it seems probable that, with future improvement in the preparation and technique, this method will be generally accepted as one of the most important aids to the medical treatment of tuberculosis.

Epilepsy

The last of the chronic diseases to which I shall call your attention is epilepsy. This is a chronic nervous disease, characterized by recurrent general paroxysms appearing at variable intervals, and attended by loss of consciousness and sensation. Its principal forms are the grand-mal, or major epilepsy; petit-mal, or minor epilepsy, and Jacksonian, or cortical, epilepsy.

The theory of epilepsy generally accepted assumes the existence of a convulsion-center at the base of the brain, irritation of which will produce an epileptiform convulsion. The irritation may come from many different sources; but when once convulsions have been induced, no matter by what cause, they will be brought on more easily with each succeeding attack, until finally such

changes have been wrought in the convulsion-center itself that thereafter the seizures occur at irregular intervals, without the intervention of any apparent cause.

Epilepsy does not belong to the class of self-limited, or spontaneously curable diseases. Its natural course is from bad to worse, until a fatal result ensues, either as a direct result of the disease or, more likely, from the many complications following in its wake. It is estimated that not more than ten per cent of all victims are curable by any known method of treatment, while not more than fifty per cent are benefited in any appreciable degree even by prolonged treatment.

You will see that these unfavorable statistics render the question of treatment of all the greater importance, and any plan of treatment which offers hope, even in selected cases, worthy of careful attention.

In all cases of epilepsy, the first thing to be done is, to discover the primary source or cause of the irritation, and to remove or modify this as far as may be possible.

The most frequent exciting causes are to be looked for in influences arising from one of three directions: the digestive organs, the sexual system, the mental functions. Look out carefully for all possible sources of irritation in each of these three directions. Time will not allow me to go into detail.

If the cause can be determined, the next thing is, to remove it if possible, or, when this can not be done, to modify its effects or to render it comparatively inactive. In mild and incipient cases, no further measures may be needed to restore the patient to health; and in a large proportion of cases there will be more or less marked improvement, either permanent or temporary. If no cause can be detected (and this is often the case), we are accustomed to label such cases as idiopathic—although, strictly speaking, there probably are no idiopathic cases of epilepsy.

The second thing to be done is, to lead the patient into right habits of living, both as to diet and general hygiene. To do this, it is essential to secure the full cooperation of the patient himself. The food must be plain, simple, and easily digested, and the ordinary rules of hygiene as to diet must be scrupulously observed. Proteids should be allowed only in very limited amounts; still, I do not believe that they should be prohibited entirely.

The saltless diet is now very generally recommended for epileptics, but I have never seen any wholly satisfactory explanation of the benefits claimed for it. Indeed, in some patients it has been found that, while the paroxysms were measurably held in check by salt exclusion, yet, this was accompanied by a grave nervous condition, characterized by delirium and suicidal impulses, and all of which passed away when salt was restored to the diet. My own practice has been a compromise between the two extremes. I direct that no salt be used as a condiment, but I do require that the food be prepared strictly without salt. This plan works satisfactorily for the patient, and saves much trouble for the family.

Moderate exercise, both physical and mental, is desirable, but all severe labor of body or mind should be strictly prohibited.

The third indication consists in providing proper medical treatment. This includes general and symptomatic medication, of which I shall not speak further, as it is conducted wholly on general principles and needs no special description. It also includes, in those patients having a distinct aura, provision for some quickly acting means of relaxing the vasomotor spasm, overcoming the muscular contraction, and thus preventing the occurrence of the convulsion; the means to be employed at the first approach of the aura. The remedy most com-

monly employed for this purpose is the nitrite of amyl (preferably from perles, which may be carried in the pocket), this to be inhaled at the earliest indication of the oncoming of the paroxysm.

However, the essential and important thing is, to overcome or to lessen the abnormal irritability of the convulsion-center. For this purpose, a multitude of drugs have been employed and are still being recommended. The one remedy which is almost universally used is the bromide of potassium or some other compound of bromine. But, while in some cases this is very beneficial in restraining the paroxysm, its secondary or incidental effects are unpleasant and injurious, producing depression, dulness, and mental hebetude, with partial or complete loss of mental power; while in a considerable proportion of cases no benefit is derived, the convulsions either not being affected or, not seldom, being made worse.

Under these circumstances, a study of other remedies is essential, and I shall introduce to your attention two drugs which I believe to be far superior to the bromides, as has been proved by the experience of numerous physicians during the past few years. These are, *verbena hastata*, commonly known as blue vervain; and *solanum carolinense*, the common horse-nettle.

Of *verbena*, I can speak from an experience extending over some twelve years or more. It is clearly a nerve tonic, and one of its earliest effects is in most cases to brighten up the mental powers of the patients and give them a more cheerful aspect. This is in marked contrast to the bromides.

The class of cases in which I have found *verbena* to be especially beneficial includes, first, those in which the action of the bromides is distinctly unfavorable, rendering the patient worse instead of better; and, secondly, the comparatively mild cases, in which the convulsions

are not extremely frequent or severe, nor are the mental faculties greatly impaired. This class includes most of the curable and a large portion of the improvable cases.

As to the preparation used, all my experience has been with the concentration, known as verbenin or (of late) verbenoid. This is prepared in tablets of 1-3 grain each, representing about 15 grains of the crude drug. Beginning with one, two or three tablets at a dose, give this dose before each meal and at bedtime. Increase by one tablet each a *day* (*not* one at each *dose*), continuing until either the convulsions are measurably controlled or signs of ill or unpleasant effects from the drug become manifest. I carry this augmented dosage, without hesitation, up to as much as six tablets four times a day, and have never met with untoward effects. In one or two cases, I have observed another result; namely, that the patient was not improved by this course, but actually grew worse. This, of course, is an indication for dropping the drug. When this occurs, I change to *solanum carolinense*.

Solanum carolinense is a powerful antispasmodic and nerve sedative, and, unlike verbenin, in large doses produces potent physiological effects. The general indications for its use I find in those cases where the bromides exert a beneficial effect on the convulsions (although at the same time producing secondary unpleasant effects); and, further, in all cases which resist the comparatively mild action of verbenoid. Theoretically, *solanum* should be of more value than the former remedy; but in practice I have found it far less frequently applicable; or perhaps I should say, I have found it to be distinctly helpful in far fewer cases than verbenin.

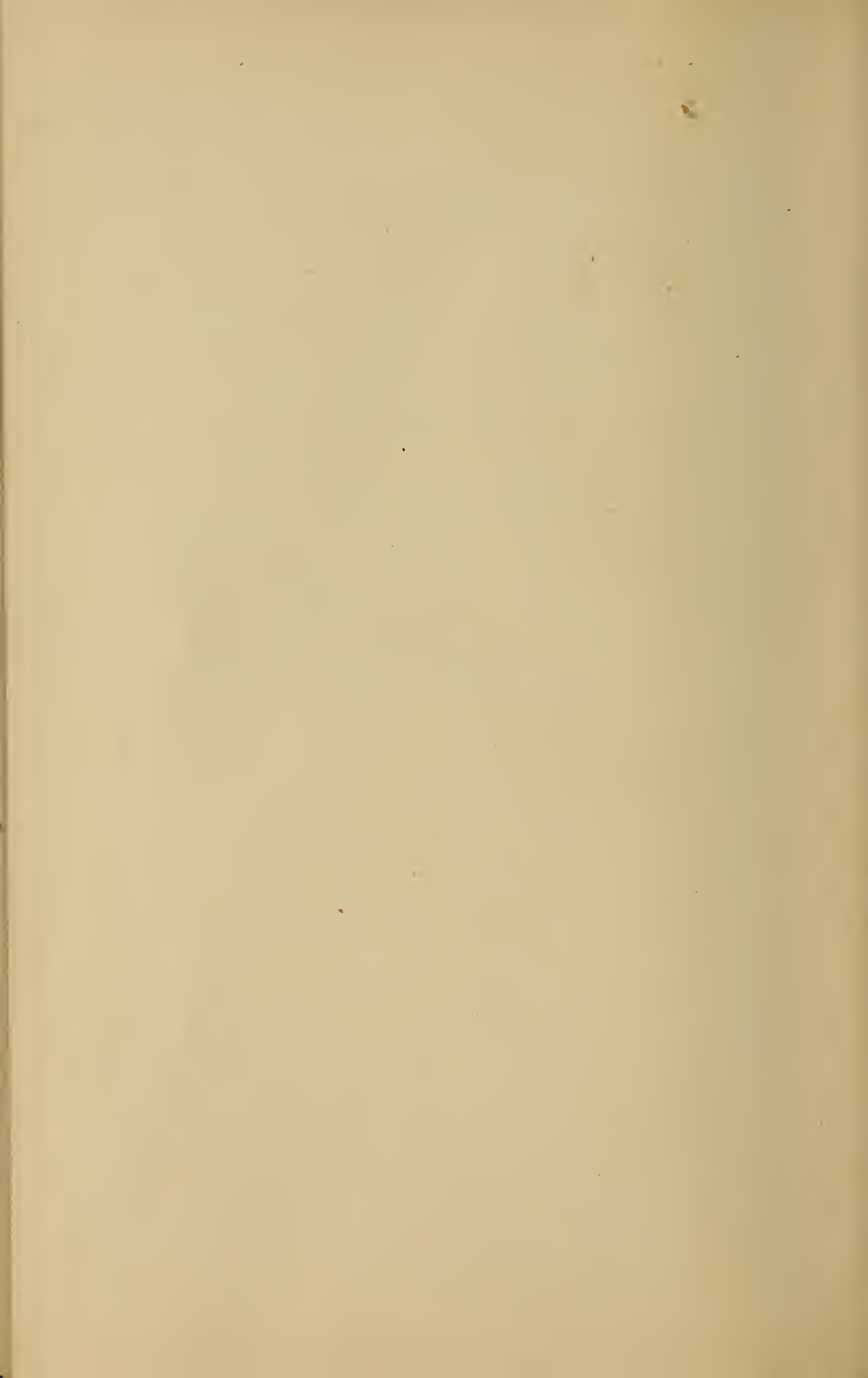
I have given this drug in two forms; namely, the "specific medicine" of the Eclectics, and the more exact alkaloid, solanine hydrochloride. The dose of the "specific medicine" varies from 5 to 30 or more

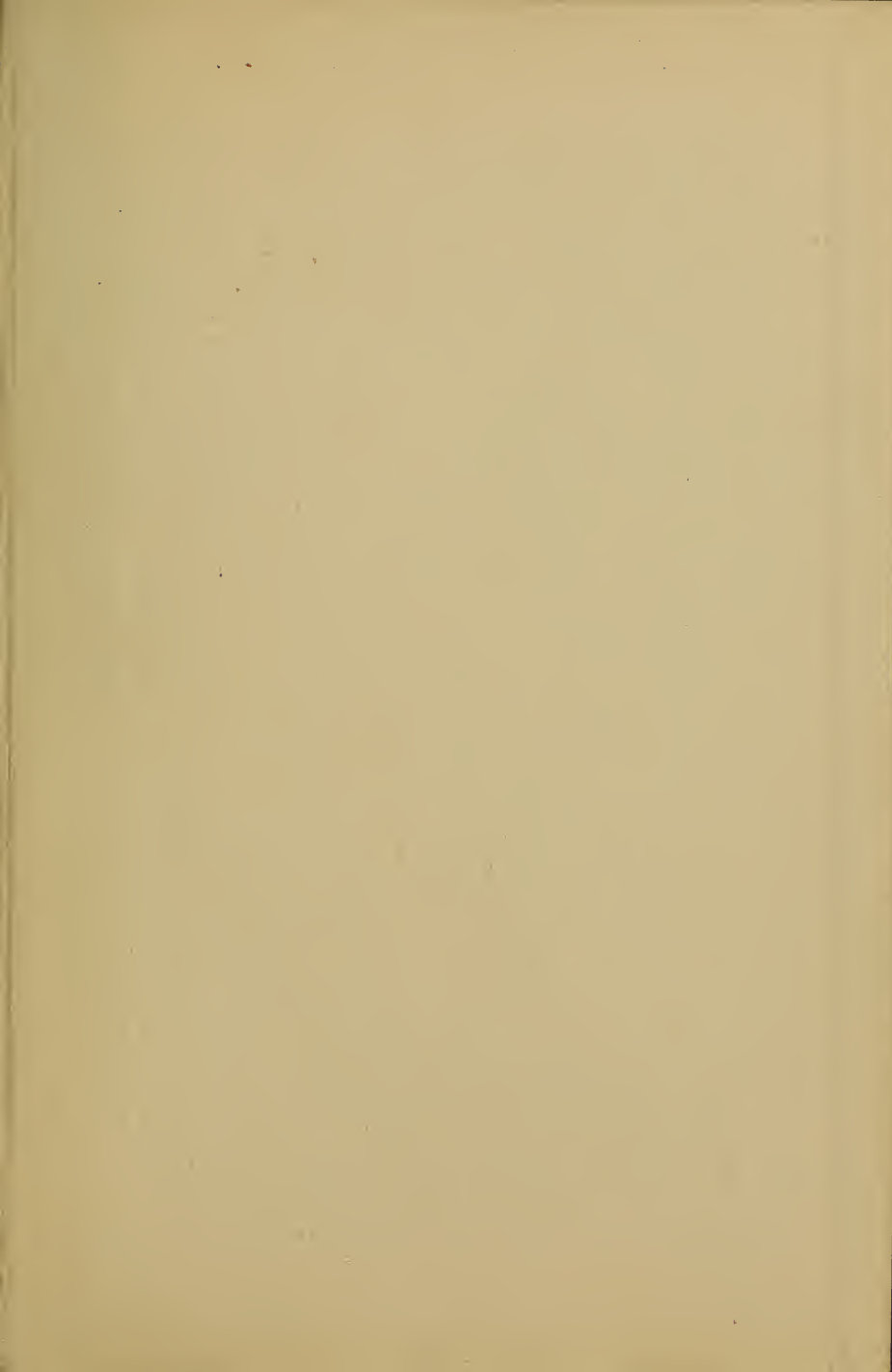
drops, to be taken before meals and at bedtime. The alkaloid is prepared in granules of 1-64 grain, and the dose of these ranges from three to eight or more, taken four times a day. The rule of dosage is the same as for the other active principles: begin with the minimum dosage and increase until the desired effect is produced.

I have given only the briefest outline of the treatment which I recommend. Should any of you desire more complete details, I shall be pleased to send you reprints containing a fuller discussion and more definite instructions.

In closing, let me say, Remember that epilepsy seldom is cured. Do not expect too much. When you have found a remedy which exercises a reasonable degree of control over the convulsive attacks, do not forget that it should be continued indefinitely, varied as to dose according to the needs of the case. Never pronounce a patient cured until at least two years have passed without any return of the paroxysms.







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